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NEW YORK SHOW

NUMBER

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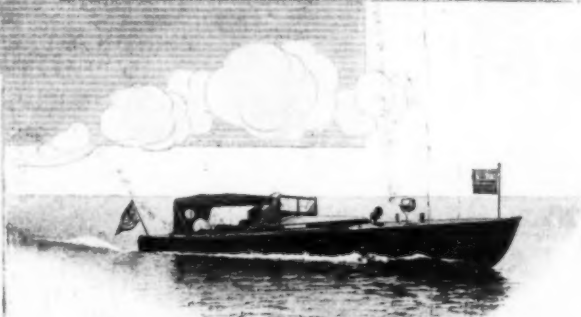
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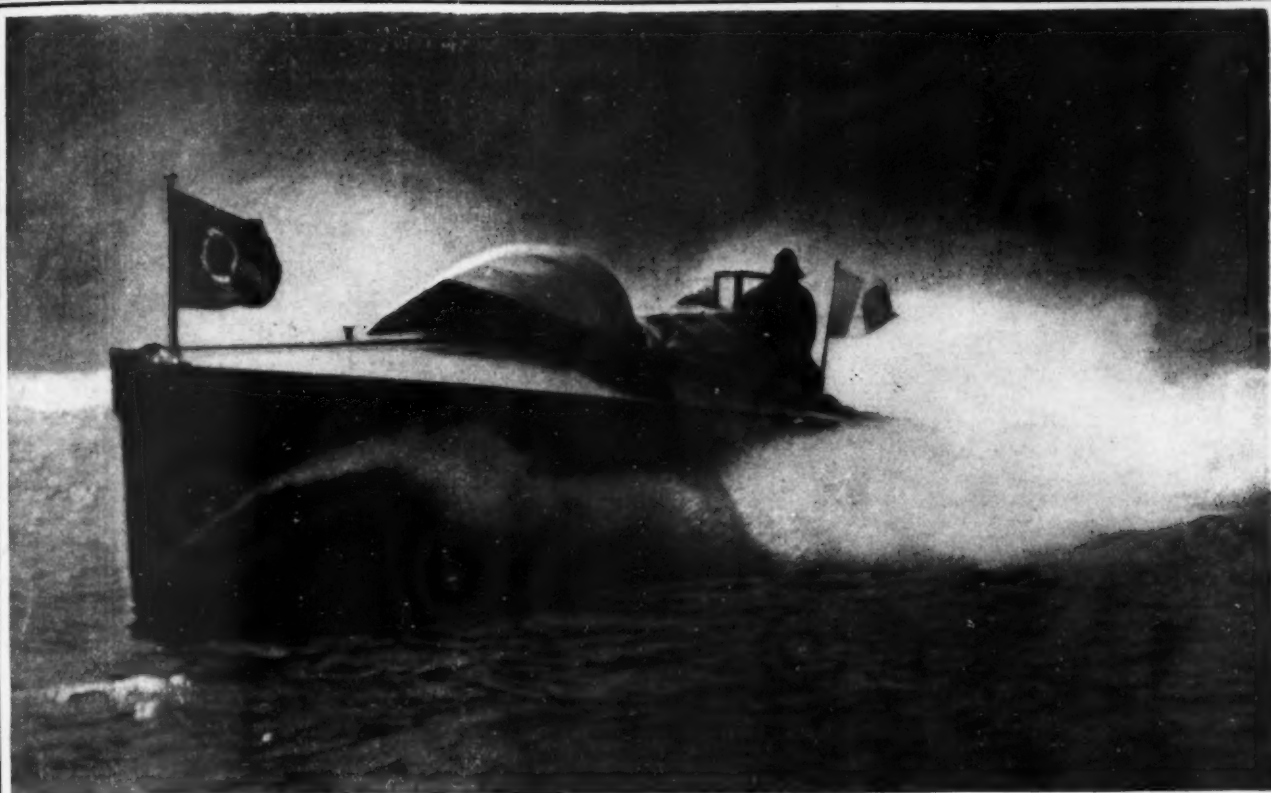
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March, 1911.

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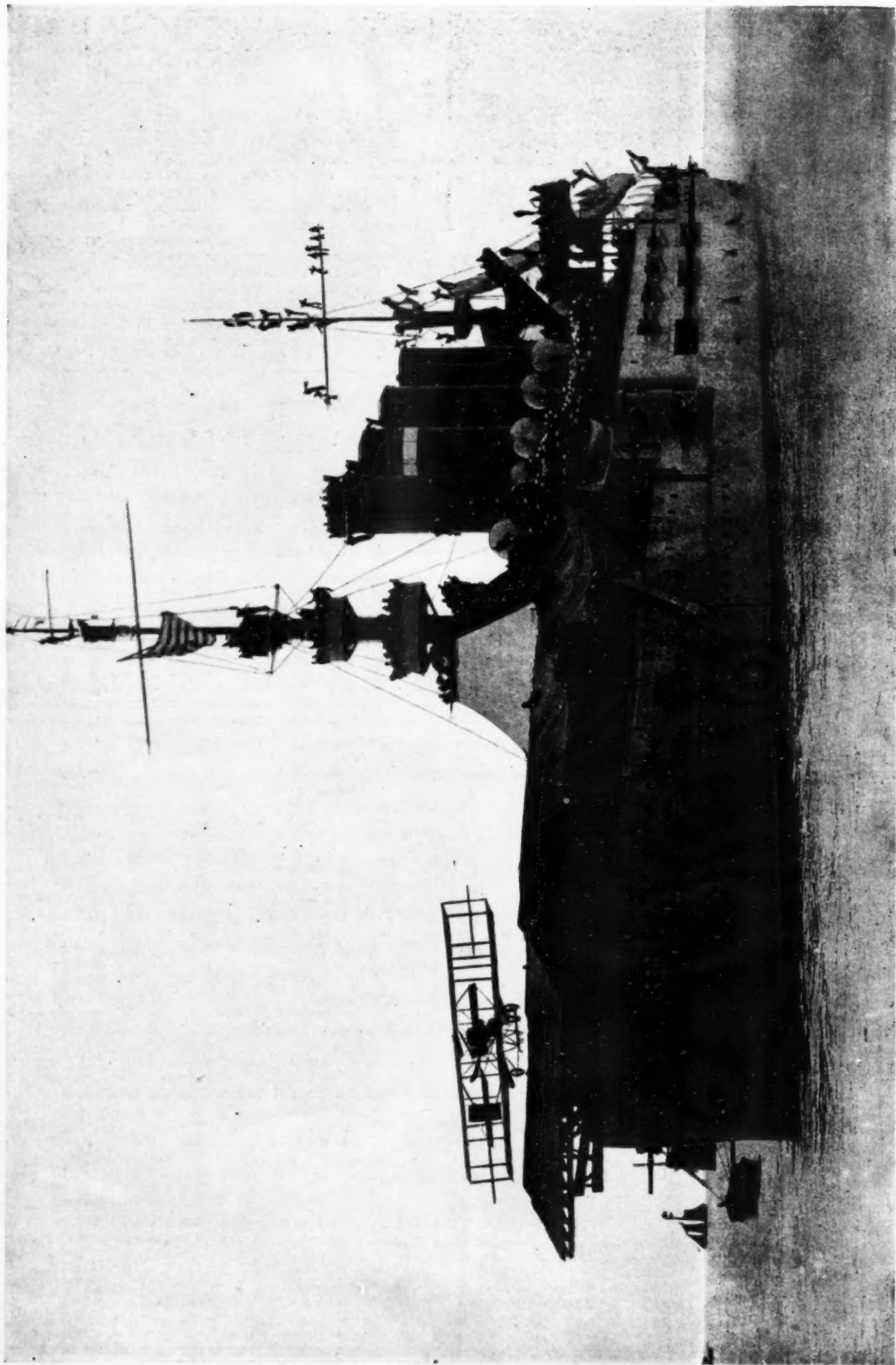
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An epoch-making event—Chas. Ely, in his Curtiss biplane, alighting on the U. S. S. Pennsylvania, after his flight across San Francisco Bay.

This flight, while in itself no more remarkable than many another, proved the practicability of alighting in a very small space. On the landing stage which is shown built over the after deck of the battleship, were a number of bags of sand arranged in pairs, with a rope attached between each pair. The biplane was equipped with grappling hooks, visible in the picture, which engaged these ropes, thus applying a gradually increasing braking force which brought the machine to rest without shock and in the remarkably short distance of about 25 feet.



The New York Motor Boat Show.

Seventh Annual Exhibition of the National Assn. of Engine and Boat Mfrs.
Progress and Tendencies in the Design of Motor Boats and Their Power Plants.

MADISON Square Garden is again the Mecca toward which motor boatmen and manufacturers from all over the country are migrating. The Boston Show, as might have been predicted, was a great success and launched in fitting fashion a season that bids fair to be by far the biggest and best yet, not only from the standpoint of the trade but from that of the sport in general; and now the New York show, the Seventh Annual Exhibition of the National Association of Engine and Boat Manufacturers, is with us for two whole weeks.

This fact alone is a sufficient criterion of the coming season and the great advancement in popularity of the sport. It is seldom indeed that a cause is deemed of sufficient importance or interest to warrant a two weeks' exhibition at the greatest show-place in the country, and this year's exhibition is not only a record achievement in the motor boating field, but is one of the biggest exhibitions ever held in New York City.

These annual shows are the milestones that mark the progress in their particular field. They present in concrete form the combined results of the activity in many allied industries and further the aim of the organization behind them, of tying together and conserving the energy which, if expended by the various members individually, would be dissipated without accomplishing much for either the manufacturer or the spectator.

Of course, the progress in this advanced stage of the industry is seen to be principally a "refinement of details" that, in the rapid and more spectacular early development of the motor boat had been, to some extent, overlooked. But besides this general refinement, there is a decided trend toward the development of definite types of boats for definite sets of conditions, differentiating them into many branches from their common ancestor, the "family launch."

The most striking tendency in the cruising class is the getting away from the raised deck cruiser of the pure type. Not that the raised deck feature itself is being abandoned—it is one of the big advances that is sure to survive—but a striving for better light and ventilation, more cockpit and deck room, and less obstructed view, is most apparent. The motor boatman is coming to realize that his cruiser—the one of moderate size—is used principally in the day time and that cockpit or deck space is therefore of even greater importance than space below decks. He is, therefore, considering more carefully the use to which he is going to put his boat, before buying it. He is getting away from the 30-ft. dreadnaught with towering top sides, tiny cockpit, and an underbody like a pie tin. For ordinary cruising—week-end runs and afternoon trips—to which use by far the greater number of small cruisers are put, the tendency toward the day cruiser type has started and will continue, and all things considered, this tendency is a good one. These boats as they are not subjected to any heavy weather, may be designed with the easy lines and flat after body of the

runabout and, with the lighter medium duty power plants, a speed of between 18 and 20 miles is easily attainable—and frequently even more. For extended inland cruising in protected waters the well-known raised deck type will of course continue in popularity.

For deep-sea cruising, the whaleboat type of hull with symmetrical ends and plenty of deadrise is gaining in popularity and many of this type are now being built, with the cockpit or flush deck amidships and with a cabin aft. This is an ideal design as it gives high freeboard and a raised deck aft with a logical place to install the motor beneath the deck amidships. Furthermore, it overcomes that most objectionable disadvantage of the after cockpit—its limited outlook, giving as it does an unobstructed view in all directions. The tendency toward the midships deck has not been noticeable in the faster day cruiser class, as the flat after underbody of this type will not permit of anything but a cockpit being located in this part of the boat.

In short we are developing a class for every service instead of following a fad and making one type—and that an incongruous combination of deep sea cruiser and runabout—do for almost any set of conditions.

Getting back to the Show again, about the limit in overall length of the cruisers on exhibition is 45 ft., although the long, lean, Elco De Luxe measures 54 ft. overall. Two boats of the former length are shown, one by the Racine Boat Company and one by the Gas Engine & Power Co. and Chas. L. Seabury & Co., Cons., and both of these are of the bridge deck type. The Elco 40 ft. raised deck cruiser and the Truscott bridge deck 40-footer are in the same class and a glance at this group will give the spectator, better than anything else could, a comprehensive idea of the latest American practice in the field of the medium sized cruiser.

Many of the exhibiting companies report big boats under construction at their yards, and whereas 98 ft. was the overall limit last year, which was seldom exceeded, this season will see a number of new boats far in excess of the 100-foot mark; for example, the 140-footer designed by Cox and Stevens for Alexander Winton, and building at the yards of John H. Dialogue & Son, at Camden, N. J., and the 138-footer, mentioned elsewhere in this issue, designed and building at the Seabury yard for Morton F. Plant, and Cynthia, the New York Yacht Launch & Engine Company's 110-footer, also illustrated and described in this issue. In fact the tendency is toward bigger motor boats, although the art of supplying a great degree of comfort in a very small space is by no means a lost art and is at work, with better results than ever, in the mosquito fleet.

The dory as usual, is popular at the show as it is all along the coast—and deservedly so. The popular practice, borrowed from the fishermen, of installing the motor aft in its own compartment under a sliding hatch, with perhaps a little cubby or even cabin forward, gives lots of room amidships and these

advantages, together with the well-known seaworthiness of this type of hull, make the dory the ideal boat for the large percentage of the motor boating fraternity who really like the water and want to be out in it when it kicks up a bit, and who either from necessity or choice find their pleasure in the small boat.

In the express launch class there are several long, clean lined greyhounds that look good for speeds in the neighborhood of 30 miles and the little brother of this type, the fast runabout, is probably the best represented class at the show. The underbody of this type practically has been perfected for some time and the development has been in the interior arrangement, bulkhead control and installation of the power plant. Much more attention is being given to harmonizing the boat and its engine than was the case a few years ago. The naval architect and marine engineer have considered each other with the result that now, instead of the incongruous combinations of engine and boat familiar in the past, we have in practically every case a combination that is an harmonious unit.

We are talking in higher speeds than we were a year ago, due to the phenomenal records set up all over the country, and to keep pace with the new standards, more attention is being given to the actual designing of the faster craft that are now being turned out. In the later speed boat designs and in some of the fast runabouts the influence of the hydroplane is strikingly apparent, and in fact the light runabout with skipjack model forward and flat plane aft is becoming almost a type. The regular skipjack or V-bottom construction is gradually gaining in popularity as its simplicity of construction and easy driving qualities are becoming more widely known. A few men, notably Mr. Wm. H. Hand, of New Bedford, and Mr. Henry Douglass Bacon, of Bath, Maine, have experimented widely with this type and we are fortunate in being able to include in this issue an article by the latter gentleman on how to build one of these fast little runabouts.

The motor canoe seems to be with us to stay in spite of the ridicule of some of its critics. The lines have been modified somewhat and sponsons are frequently used. They give additional buoyancy, throw the spray away from the boat, make a stronger construction and improve the looks of the deck without interfering with the water lines. The canoe construction is also being employed with success by several of the builders in connection with the light speed boat form of hull and for its purpose this seems to be an excellent combination. Many of the engine builders realizing the demand for a canoe engine have placed on the market extremely light, high-speed, two-cycle, one-, two-, three- and four-cylinder motors that are little masterpieces of design and construction.

And thus we see that in the open boat class as well as that of the cruiser, the differentiating into different types for different services and conditions is also apparent.

In the motors on exhibition this year the crudity of design so apparent not long ago seems in most cases entirely to have disappeared. Neither is the present-day motor an automobile engine with minor adaptations for marine service. It is a development admirably suitable for its particular field and, especially in the larger sizes is being supplied with complete ignition and reversing equipment, the latter most frequently being incorporated in the engine frame.

In the two-cycle field the most popular line is the four- or five-horse-power unit and its multiples. This size may be had in one-, two-, three-, four- and even six-cylinders and in three general types: viz., the high speed, light weight, developing its power at from 800 to 1,000 r. p. m., and medium duty turning at 600 to 800, and the slow speed, heavy duty type of from 350 to 600 r. p. m. The majority of the first two divisions employ the jump spark system of ignition while the make-and-break is the more popular with the heavy duty models. Many of the two cycle motors are reversible and many of them, especially the single cylinder models, depend solely upon this means of reversing. However, the tendency is toward the reverse gear and reversible propeller and most of the larger outfits include one of these devices in the regular equipment.

Although there are a number of smaller two-cycle motors in one-, two-, three- and even four-cylinders, the four- to five-horse-power unit with its numerous multiples and various speeds is suitable for a very wide range of conditions and is well adapted for the great majority of small craft. Some of the companies have recently put on the market extremely light two-cycle aero and racing motors that bid fair to be used extensively in the high-speed racing craft this season.

The four-cycle engine, while made to some extent in the

smaller sizes and even in single-cylinder units, is most frequently seen in sizes above 10 or 12 h. p. and in multiple-cylinder models. Most of the four-cycle lines start with a two-cylinder 10 or 12 h. p. model of the medium duty or heavy duty type which is adapted to the same service as the two-cycle models of equal power. The four-cylinder, however, is by far the most popular multiple, although the six and the eight are common, and in the larger sizes there are scores adapted for all kinds of service from the 100-ft. cruiser or work-boat to the fastest racers. The design, workmanship and refinement of these motors rival the best in the automobile field and more thought is continually being given to the choice of metals for the various parts.

The problem of using kerosene interchangeably with gasoline or as a mixture with it, is attracting the attention of some of the designers and several of the companies are equipping their motors with devices for this purpose.

Although many of the engine builders are equipping their motors with reverse gears or reversing propellers of their own design or of some standard make, many owners prefer to choose their own reversing devices and the tendency is to employ one or the other of these means with even the smaller engines where formerly it was customary to reverse the engine. The consideration of lost efficiency with a reversible propeller is no longer an important one and the extra weight of the up-to-date reverse gear is but a trifling matter in comparison with the absolute control it affords.

In the accessory field the most striking advance seems to be in the ignition and lighting systems, although there are an infinite number of new devices designed to add to the comfort or convenience of the motor boatman, that could hardly be classified. There are on exhibition compact generating sets for supplying the electric lighting current on the larger cruisers, and consisting of a small gasoline motor directly connected to a dynamo and pumps for water and compressed air. These are so compact that they are being installed on many of the new cruisers of only medium size. Such a plant makes the lighting system independent of the main power plant and eliminates the necessity of the storage battery.

The problem of ignition, that has been until the last few seasons such a bugbear to the motor boatman, is being so simplified that it seems no longer a real problem. For the man who prefers the dry battery there are a number of excellent water-tight holders that are actually water and moisture proof. These boxes are made with receptacle to contain a number of dry cells and with interior connections and outside terminals, so that they may be stored away in a locker with no other precaution against moisture.

The storage battery has undergone much refinement lately. The new ones are smaller, lighter, cheaper, and more efficient than those on the market a few years ago and—despite their early acquired reputation of being unreliable and subject to all sorts of ailments—a reputation by the way not entirely deserved and due principally to the ignorance of the users—they are becoming popular both as a direct source of ignition current and as an auxiliary with the magneto.

As with accessories in general, so it is with magnetos. There are a great number of absolutely reliable ones now on the market, both of the high-tension and low-tension types, although the tendency seems somewhat in favor of the self-contained high-tension machine; and many of these little affairs are masterpieces. It is no longer necessary to carry an auxiliary battery for starting the engine, as with very few exceptions the magnetos now on the market are guaranteed to start the engine on a partial turn of the crank. It is certain that they are efficient at much lower speeds than formerly.

Of spark plugs the variety is unlimited and many and ingenious are the arrangements for overcoming fouling, short-circuiting and the other ailments peculiar to the beast. It's energy well spent, too, for a balky plug of the kind we used to drive (if the term may be used) would make the proverbial government mule green with envy. And so we might continue indefinitely throughout the field of general accessories. To those which have appeared since last year alone, we could devote much space, but for a more specific description of the exhibits we refer the reader to the New York Show Section of this number where the products of the various exhibitors are taken up more at length.

There are at the New York Motor Boat Show 123 separate exhibits and there are considerably more firms than this actually represented. Of this number seventeen are boat builders, forty-nine are engine manufacturers and of the fifty-seven remaining the great majority may be listed under the heading of general accessory manufacturers.



Nootka as she appeared after the addition of her deck-house, which has become the social and navigating center of the boat.

A Limousine Boat.

**A Type That Makes an Excellent Cruiser and May Prove Popular in the Future.
How an Auxiliary Ketch Was Reconstructed Into a Strikingly Original Craft.**

THE Auto-boat has become the most popular type of small craft and it may be that, in the near future, we shall see a type of boat which for luxury in cruising might be compared to the limousine.

Nootka, the boat we are describing, was originally a heavy weather type of auxiliary ketch designed by Norman L. Skene and built in 1907 by J. W. Hall, near Seattle. She had a moderate sail plan and with her auxiliary motor was capable of a speed of 8 or 9 miles per hour. Even at that time it was the general comment that she had remarkable accommodations for her 47 feet, but her owner was ambitious to secure more of the real house boat comfort without in any way endangering the seaworthy qualities of the boat.

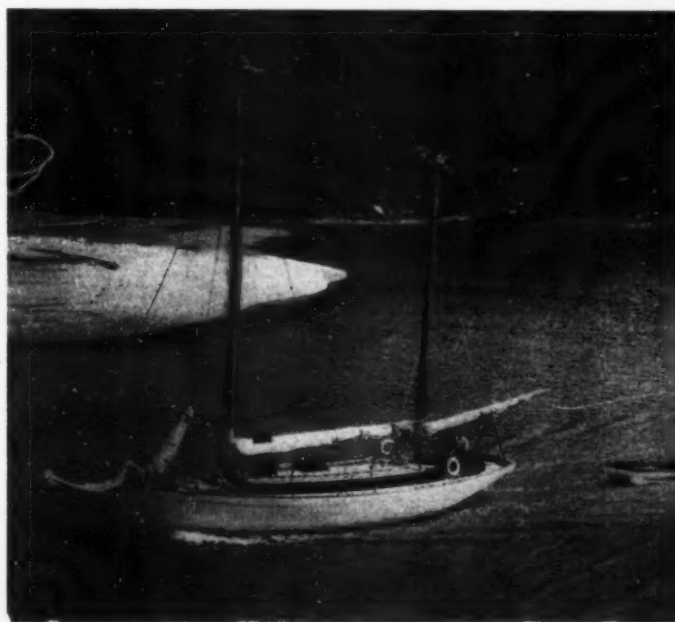
Nootka appeared originally as shown in the lower photograph on this page, and when the change, shown in the upper photograph, was first suggested, every "expert" declared that it would ruin the boat. It is true that her appearance is unlike anything we have thus far been accustomed to, but the real worth of such a departure rests entirely with its all-round practicability. All of the critics have since been converted to enthusiastic advocates of the deck house and many even claim that

her appearance, instead of being impaired, has been improved. In an auxiliary thus equipped it is possible to carry real working sail with an after deck-house, and the man at the wheel can watch his sail and keep her "full and bye," not to mention leaning out of one of the forward windows to ease the main sheet or take in the slack for a jibe.

In remodeling the boat the first operation was to remove the mizzenmast and all its gear and then the cockpit coaming was

cut down to the level of the deck. The rudder post was cut off about two feet and an Edson screw steerer was fitted below the level of the deck with the wheel removed and a universal joint substituted to connect with a shaft running forward. The old cockpit was then filled with gasoline tanks and a removable flush deck was built over them. The deck house was built on this after flush deck and, in order to minimize its top-heavy appearance, a raised bulwark was worked completely around the stern, forming a sheltered cockpit in the lee of the deck house and large enough for three or four wicker chairs.

The deck house was built entirely of teak inside and out, with plate glass windows dropping into pockets, and sliding glass doors. There is an extension transom on the starboard side with two large



Before the change, Nootka was an orthodox auxiliary ketch.



Nootka's deck-house appears more like that of a 100-foot motor yacht than of a 47-foot auxiliary.

drawers beneath it and a folding Pullman berth to port, with a shelf above it. A drop leaf table 42 in. by 48 in. fits into floor sockets and serves as a chart table for the man at the wheel. The latter operates a sprocket chain connected to the long shaft mentioned above so that there is none of the lost motion so common when long tiller ropes are employed. The engine control lever is located just to port of the steering wheel and

a telephone over the wheel connects with the engine room and galley.

From his sheltered position the steersman has absolute control of the boat and is comfortable in cold weather, as the deck house is provided with an open grate yacht stove. In fact this house is the social as well as navigating center of the boat and seems more like the deck house of a 150-footer.



The main cabin, looking toward the after stateroom. Note the real boaty simplicity of her interior.



The main cabin, looking forward to the engine room and galley.

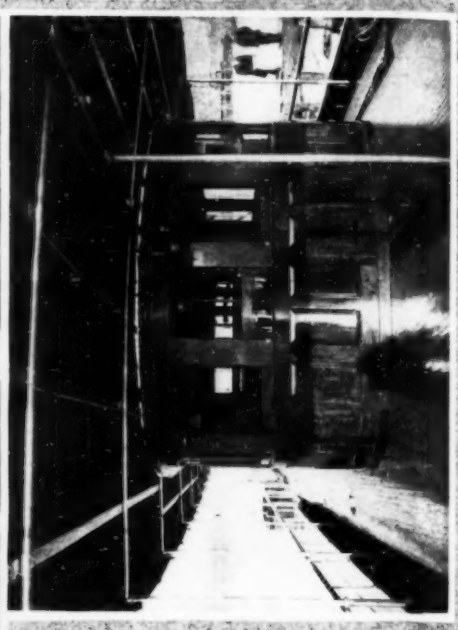
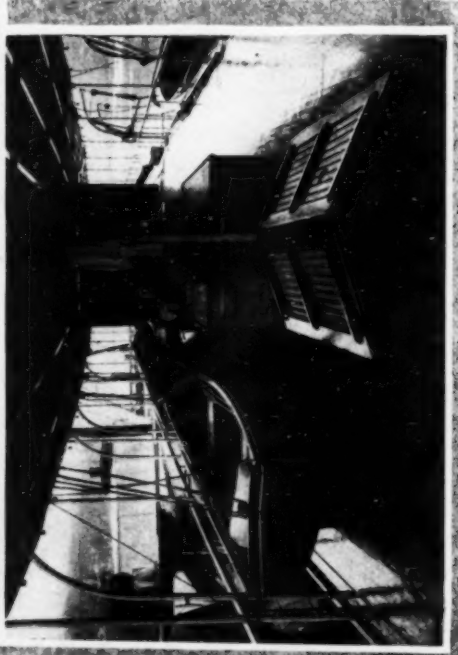
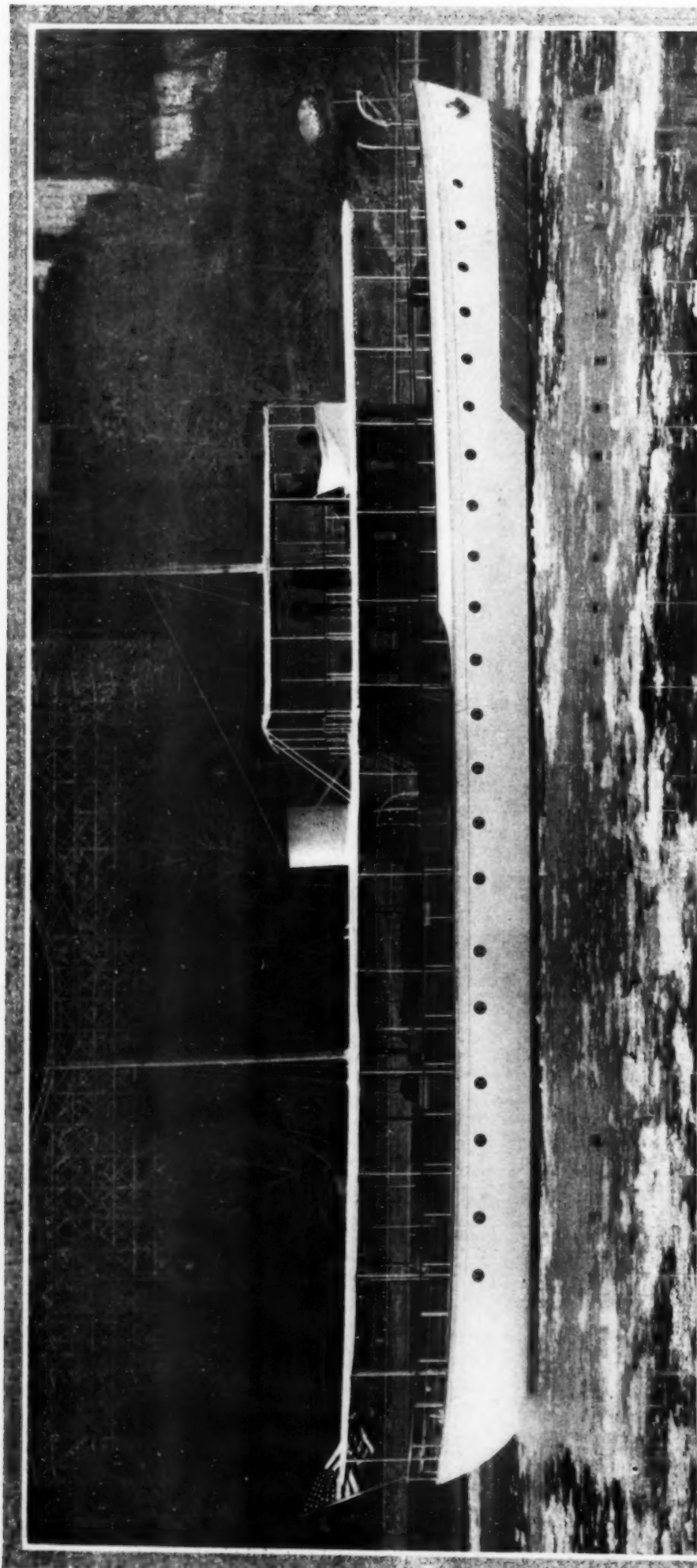
Now as to the results of the metamorphosis: Nootka is steadier than before and rolls less in a seaway. About 1,600 pounds were sawed off the after end of her cast-iron shoe and an equal weight stowed forward to restore the trim.

The mizzen had hardly ever been used as it increased a strong weather helm, and she seems to handle under sail as well as she did before, no changes having been made in the

forward rigging. In her length overall of 47 ft. 4 in., beam of 13 ft. 6 in. and draft of 5 ft. Nootka has comfortable accommodations for seven in the owner's party besides a crew of two men. She has two lavatories, two toilets and a full sized bath tub. She is equipped with an 18 h.p. Standard motor and can travel 400 miles on one filling of gasoline. Her sails make her independent of her power.



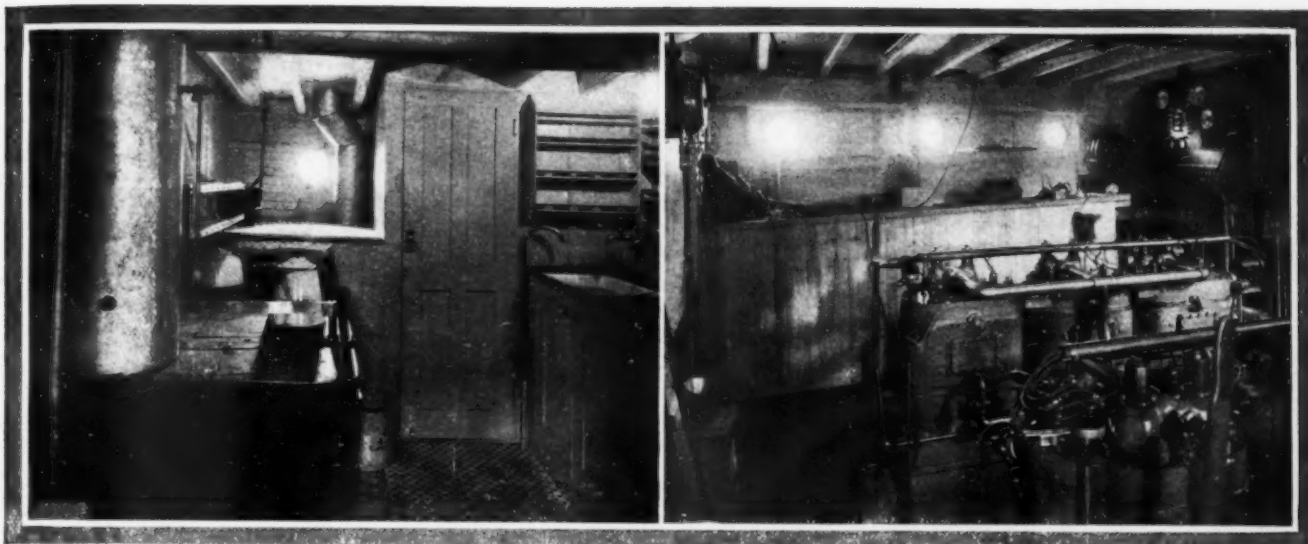
The galley and Nootka's 18-horse Standard motor occupy the forward part of the boat.



In both design and size Cynthia is representative of the latest in American yacht design.

Cynthia III--A 110-Footer.

Length over all.....110 ft.	Bore.....8 in., stroke 10 in.
Beam 20 ft.	Total H. P.....200
Draft 4 ft.	Cruising Speed, 12 to 13 miles per hour
Framingwhite oak	Independent Electric lighting plant
Planking..2 in. yellow pine	Gasoline capacity, 1500 gallons, in copper tanks installed in separate compartment.
Finish, exterior.....teak	
Interior, mahogany and white enamel	
Motors, two 6 cyl. 20th Century	



A corner of Cynthia's galley and a glimpse of her engine room, showing her two 100-horse Twentieth Century motors.

Cynthia III, a 100-Foot Motor Yacht.

THE New York Yacht Launch & Engine Co. of New York City have recently completed the 110-footer Cynthia III for Com. Merrill B. Mills of Detroit, Mich. She has just arrived in Florida waters and has proved to be a very great success, making the passage down the coast in quite good time. The yacht was designed by Cox and Stevens of New York.

The plans show a full bodied able vessel, with canoe bow and stern, good beam, ample freeboard, and flush deck. The owner's quarters are in the after part of the vessel, and by an ingenious arrangement, he has access to the deck house from below, so that in bad weather it is not necessary to go on deck in order to get into the dining saloon. The quarters are remarkably commodious for a craft of this size, and comprise a double stateroom aft, the full width of the boat, with large skylight and four air ports. This room connects directly with a bath room on the starboard side.

The entrance to the after accommodations is by means of a companionway in the middle of the vessel, which lands below abreast the bathroom, in a passage which also opens into the after stateroom. On the port side of this companionway and opposite the bathroom just mentioned is a comfortable stateroom. Forward of this room, on the port side, is another guest's stateroom, opening into the passageway and also communicating with a bathroom on the port side. On the port side forward of this bath, also connecting with it, and with the passage, is still another guest's stateroom, similar to the one just described, and on the starboard side of the passage are two other similar staterooms, with a bath between. A recapitulation of the after accommodations shows that there are five single staterooms, one double stateroom and three bathrooms, all conveniently disposed and in-

tercommunicating, so that a large number of guests can be made perfectly comfortable and secure all the privacy that is required.

At the forward end of the passage, dividing the staterooms a stairway has been arranged which communicates directly with the deck house, a slight recess being made into the engine compartment for this purpose. This stairway lets one into the after part of the deckhouse, which is unusually long, and is divided into two portions, the forward part being used for the dining-room, having a galley directly below it, and the after portion being a smoking-room or saloon. The deckhouse is substantially constructed and the upper portion of it is used as a navigating bridge, and also as a lounging place for the owner and his guests, there being a convenient stairway at the after end for access.

The accommodations for the crew are below forward, commencing at the engine compartment bulkhead, and consist first of a large combined galley and pantry, with hot-water heater, which in cold weather can be used to warm the vessel through-

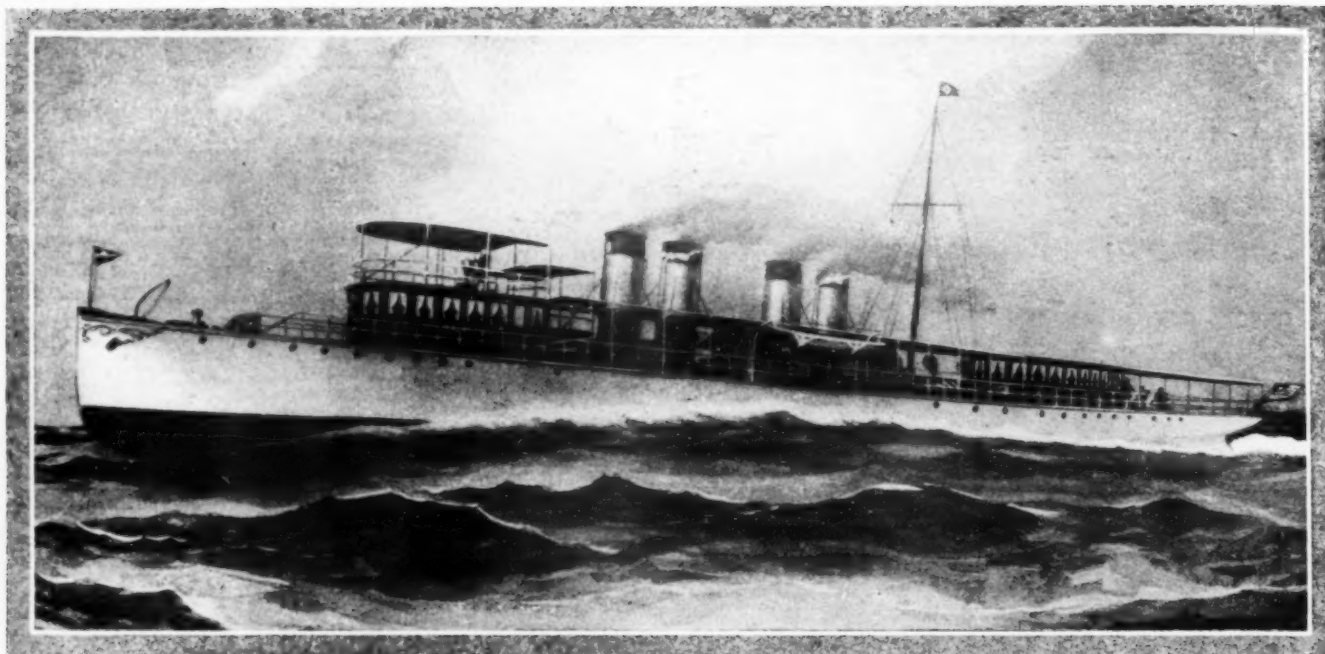
out. On each side of the passage opening into this galley space are separate rooms for the officers, and again forward of this comes a combined messroom and fore-castle.

As this craft is to be largely used in the South and therefore is liable to take the ground, she is unusually heavily built, her timbers being double sawn oak, closely spaced and her keel, keelson and deadwood also being of oak. Her planking is of 2-inch yellow pine, all securely fastened in the best possible manner.

Being a flush deck boat with continuous deck and good freeboard, she will have a strong and rigid hull and there will be no danger of her hogging or changing shape, regardless of weather conditions.



Cynthia has the canoe type of bow and stern, with considerable flare forward.



Sovereign, the 165-footer now building at the Seabury yard, will have a guaranteed speed of 35 miles per hour.

Sovereign, a New 35-Miler.

Description of the World's Fastest Private Yacht, Now Under Construction. The 165-Footer Which Will Travel 15 Per Cent. Faster Than the Mauretania.

A NEW steam yacht of exceptional interest is shown in the wash drawing above. The boat was designed by Mr. Chas. L. Seabury for Mr. M. C. D. Borden, of the New York Yacht Club, and is now under construction at the yards of the Gas Engine & Power Co. and Chas. L. Seabury & Co., Cons., of Morris Heights, N. Y. With a guaranteed speed of 35 miles an hour this yacht probably will be the fastest steam pleasure craft in the world.

The new vessel, which will be named Sovereign, is 165 feet over all, 158 feet on the water line, 16 feet beam and draws 4 feet 6 inches. The power plant will consist of two Seabury triple expansion steam engines of the latest design, driving twin screws, and supplied with steam from two Seabury watertube boilers. The construction is of steel and bronze.

Sovereign will be equipped with a steam steering apparatus and will be handled from

the bridge on the roof of the forward deck house. This deck house will be of mahogany and will be used as a dining saloon. The after deck house will be substantially the same as the forward one and will be used as a social hall.

The living quarters are aft, the owner's spacious stateroom being the aftermost compartment and connecting with a large bathroom. The guests' staterooms are also of large size and the saloon below deck will be large and well appointed.

New Rules for the British International.

A CHALLENGE for the British International Trophy has just been received by the Motor Boat Club of America from the Royal Motor Yacht Club of England, which insures there being a race for the trophy this season. After the International Cup Race held last August it was generally conceded by all parties concerned that there should be a revision to rules governing the contest and as a result of the recent conference of representatives from the Motor Boat Club of America, The Royal Motor Yacht Club and the donor of the trophy, Lord Northcliffe, the following set of rules has just been made public:

1. The races shall be run between 1st June and 1st October in each year. There shall be at least two races, and as many more as may be necessary until one country has won two races. The races shall be held from day to day, except Sundays, unless a postponement is ordered by the International Commission under Rule 15. The country which first wins two races shall be adjudged the winner of the trophy. Not more than one race shall be held on one day unless with the consent of all the contestants given after the finish of the first race. If such consent be given a second race may be held on the same day.

2. Any properly-constituted motor-yacht club, motor-boat club, yacht club, or automobile club shall be entitled to challenge for the trophy, or enter a boat for its defence. All challenges and entries shall be forwarded to the recognized club of the country holding the trophy, and in the case of a challenge the challenging club shall at the same time give notice to the recognized club of its own country. If the recognized club of a country shall receive notice of more than three challenges or three entries it shall hold such races or trials as it may consider necessary in order to select a team of three boats to represent its own country in the race.

3. In the event of no challenge having been received by the recognized club of the country holding the trophy on or before 1st March no race shall take place during that year. In no case shall the races take place within five months of the receipt of the first challenge, and no further challenges shall be accepted after 1st May in any year.

4. Not later than one month after the receipt of the first challenge the recognized club of the country holding the trophy shall give notice to all recognized clubs of the date and place of the races, and not less than two months before the date of the races shall forward full particulars of the course to the

recognized clubs of every country which has challenged for the trophy.

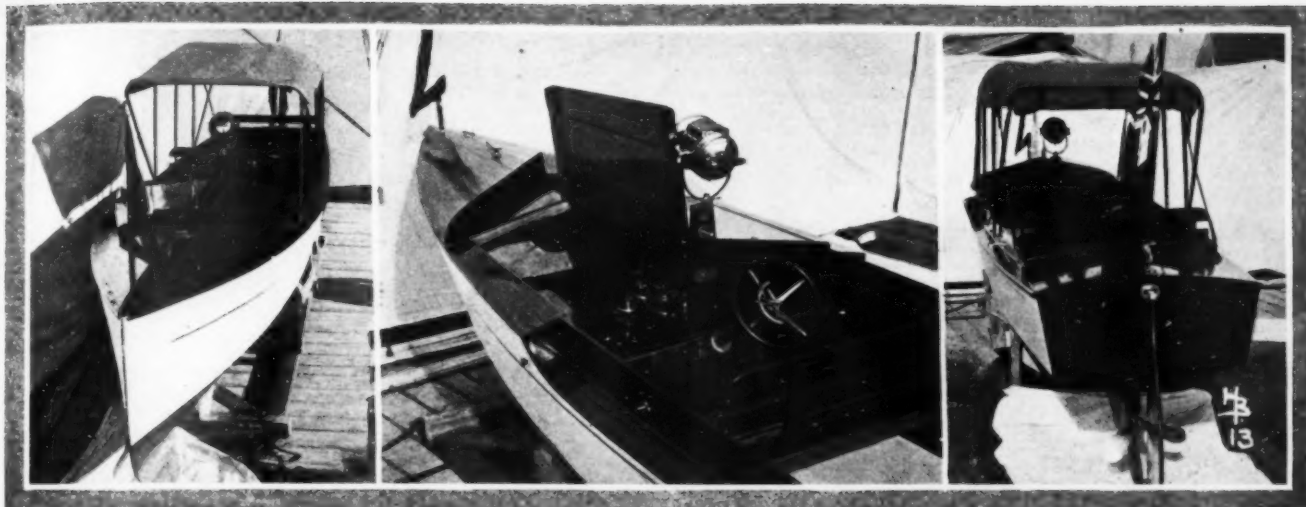
5. The races shall be held over a suitable course in sheltered waters of the country holding the trophy, selected by the recognized club of that country, or failing that in similar waters in Great Britain or Ireland.

6. The length of the course shall be not less than 25, nor more than 35 nautical miles, and shall be arranged so as to avoid any angle in the course of less than 120 deg., and there shall be a distance of at least 100 yards between any two marks. The length of each round shall be not less than five, nor more than eight nautical miles.

7. The measurement and starting of the competing boats and the judging of the race shall be carried out by the international commission defined by Condition II. hereof, which shall also be the racing committee referred to in the racing rules of the A.I.Y.A. for the purpose of considering protests.

8. The trophy shall be handed to the club of the winning boat, except that where two boats belonging to different clubs of one country have each won one race the trophy shall be handed to the recognized club of that country, and the recognized club shall hold a further race to decide which club is entitled

(Continued on page 100.)



The 22-foot V-bottom as she appears when completed. Note the low bulkhead and the accessibility of the engine.

How to Build a 22-Foot V-Bottom.

An Original Construction Designed by the Author Especially for the Amateur. Complete Instructions and Drawings With a List of Materials and Their Sizes.

By Henry Douglas Bacon.

Member of Society of Naval Architects and Marine Engineers.

GENERALLY speaking, the building of a motor boat is a bigger proposition than an amateur should tackle single handed. Unless he has plenty of time and patience to give it, and unless he happens to be a good mechanic, he is liable to make a poor showing for his pains, for the building of the launch requires skill and knowledge that can not be gained even from the reading of the best articles on "How to Build." And so it would seem wise to select the least difficult type of boat and make a creditable job and this, too, with less expenditure of labor and material. This not only applies to the amateur builder but also to those building boats for a living, for it is evident that if an equally good boat can be built for a smaller expenditure of labor and material, it can be sold for less, and other things being equal, price talks.

The type of boat described herein is a type too well known to need many comments, as it has been used for years along the coast for the roughest kind of work being an ideal sea boat, but it is only of late that it has come to its own in the motor boat field as a pleasure or racing proposition, and a good part of the credit for this is due to Mr. Hand, who has been experimenting with it, for a good many years and has turned out little boats along these lines, that could show their sterns to their round bottom brothers of equal size and horse power without any undue exertion.

The construction, however, has to a great extent retarded its adoption more generally, as the building of this type, according to the general method, that is, planking the bottom crosswise, required as much if not more work than the building of the round bottom type, there being an innumerable number of pieces, each having to be properly beveled and fitted and some requiring steam bending. The chances for a leak with so many joints is also

apparent, although this method is superior to the method adopted by some others of planking it fore and aft on ordinary frames, as this method is almost sure to leak if any amount of power is installed, or unless the boat is built very heavy.

The method adopted and explained here, is a combination of the longitudinal and thwartship framing and is the result of years experience and study with numerous types and constructions, and it is safe to say, that any man of ordinary intelligence with the slightest knowledge of carpentry can build one himself and make a shipshape, tight, little runabout that he need not be ashamed of at any yacht club, and that, too, if he commenced at once, without working way into the summer, which he would probably have to do if he chose the ordinary type. The general dimensions of the boat are length over all, 22 feet, beam 4 feet 7 inches.

Frames.—These are of oak $\frac{3}{4}$ inch thick and $1\frac{3}{4}$ inches wide and their length can be gotten from the plan when drawn out full size. To start with, lay out the section full size on the floor or paper, work from a center line and water line that should be at right angles to each other; take the dimensions from the line section plan. It is not necessary to lay down both sides (though it may be easier for some to do it this way), as the two sides of the frames can be made from the same side and

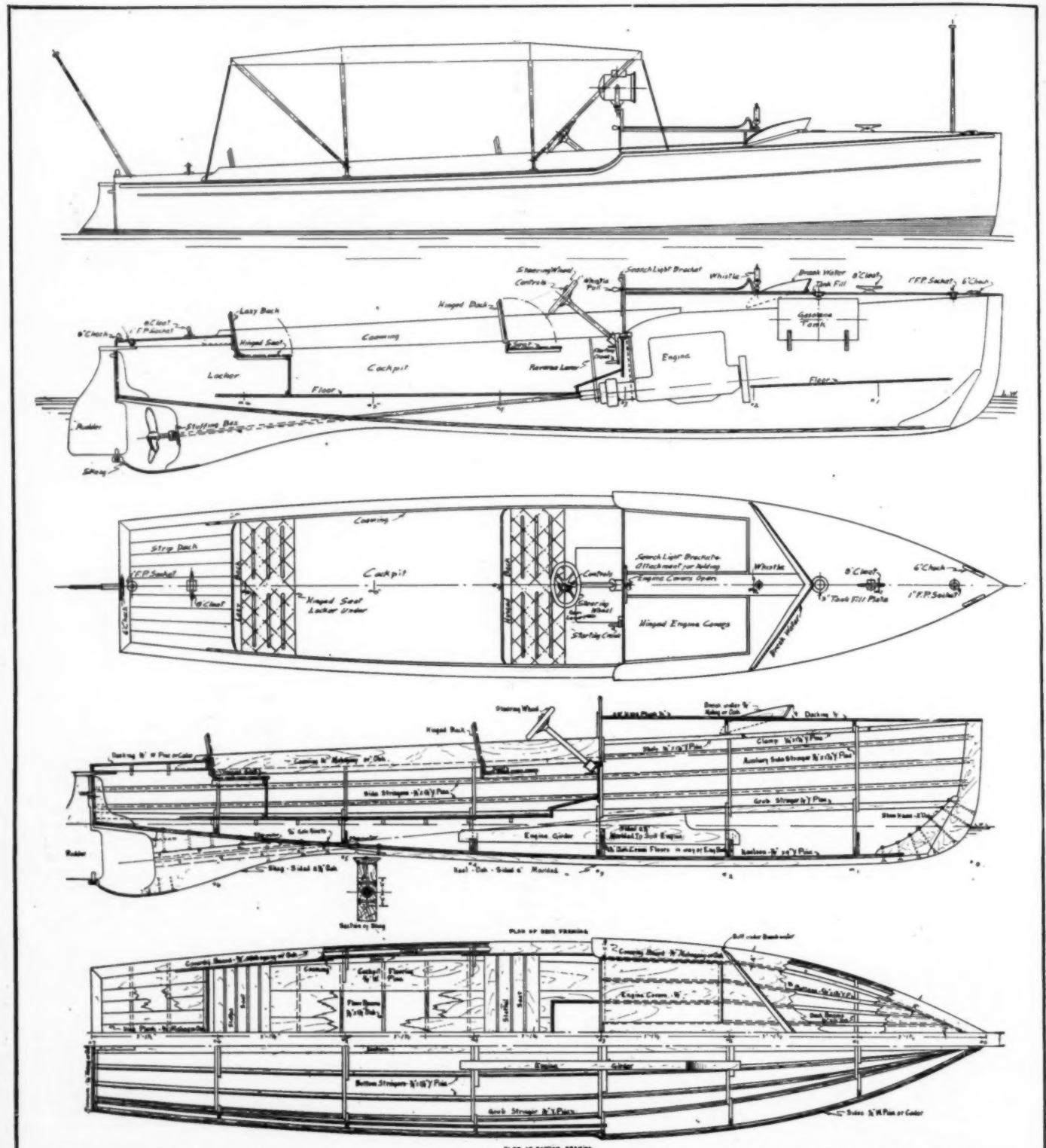
then one of them swung over to the opposite side of the center line, placing its foot up against the foot of the original and moving the head out so that it is the same distance at the deck from the center line as the other one is. When in this position nail a stay from one frame to the other, the top of the stay (a board about 4 inches wide) should be at the deck line. Mark the center line on the stay if it is not there already, and then if the floors are not already out, nail a piece of board across the foot of the frames to hold them together. In making up the half frame from the same side, make one the reverse of the other, that is, as the half frame is composed of two pieces lapped on to each other, when they are in place the two tops should be lapped the same side, therefore in making them up on the same side, lap the top over the bottom piece and the other, under the bottom piece. See sketch.

Now nail a piece of board about 4 or 5 inches wide from the foot of the frames along the center line up to the base cutting it off square at the base line and fastening it to the stay at the deck. Mark the center line along the board for use in setting up the frame. The frames can be fastened together with $1\frac{1}{4}$ inch No. 10 screws or $1\frac{1}{4}$ inch nails, clinched or riveted over burrs. Screws are the best as they are easier to work. Mark on the forward moulds the line of the main deck, as well as the raised deck, as this will be the edge of the plank in way of the raised deck. There are six frames, get each out in the same way.

Floors.—These are of oak and with the exception of the three under the engine foundation and No. 1, are $\frac{3}{4}$ inch thick and 5 inches deep. No. 1 is $\frac{3}{4}$ inch thick and 7 inches deep. Those under the engine Nos. 2, 3 and 4, are $1\frac{1}{4}$ inches thick, No. 2 is 7 inches deep; No. 3, 8 inches deep, and No. 4, 6 inches deep. Get



The deck forward is raised and its sheer line is carried aft by the coaming.



The construction plans of the 22-foot V-bottom. Note the longitudinal stringers that serve also as seam battens for the planking.

these out from the full size section you have laid down and fasten them to the frames with $1\frac{1}{4}$ inch No. 10 screws when they are $\frac{3}{4}$ inch thick and with $\frac{1}{4}$ inch by $2\frac{1}{2}$ inch rivets riveted over burrs or $1\frac{1}{4}$ inch No. 12 screws for the heavy floors.

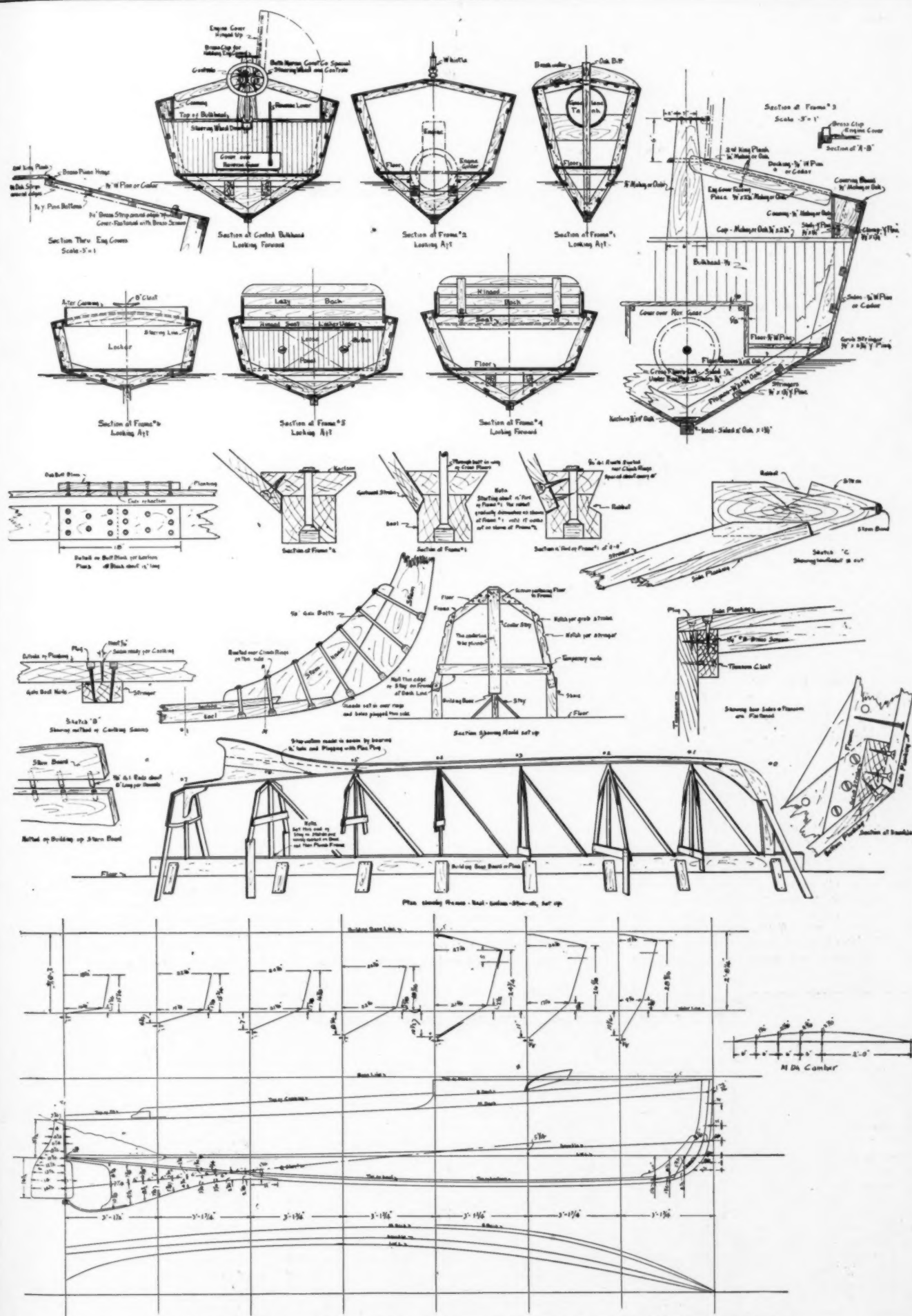
Transom.—Of oak or mahogany $\frac{3}{4}$ inch thick and shaped as shown on line section plans and laid down full size the same as frames. Allow a scant $\frac{1}{8}$ inch all around for the bevel of the planking when cutting out. It is not necessary to get this in one piece as it can be two or more pieces. The knees at center and the cleats at the sides will hold them together. Don't try to glue them up, a caulking seam will look much better by the

end of the season (by a caulking seam is meant one where the inner edges come together and the outer edges are apart so that caulking can be driven in and the seam put-tied wedge shaped). See sketch B. The cleats are $1\frac{1}{4}$ inch by $\frac{3}{4}$ inch oak and are attached to the transom with $1\frac{1}{4}$ inch No. 8 screws, screwed from the cleat side. See detail.

Stem, Stem Knee and Stern Knee.—These are of oak 2 inches thick and their shape can be gotten from the lines and should be drawn out full size on the floor. Mark in the face of stem and rabbet line. Attach the stem to the stem knee with $\frac{3}{4}$ inch bolts and rivet them up on the inside over burrs, these

bolts should be let in and plugged with wood plugs. When this is together cut in the rabbet as shown in sketch C, this will have to be trimmed up after the battens are on, as an allowance has been left for fairing. It would also be best to leave the cutting of the lower part next to the keel until this is attached and it can then be more easily seen how the planking is coming into the rabbet. The stern knee when gotten out can be attached to the transom with $1\frac{1}{2}$ inch No. 10 screws, screwed from the outside, holes being bored for their heads. Care should be taken that these holes are the same size of the standard plugs, $\frac{3}{4}$ inch in this case.

(Continued on second page following.)



(Continued from page 12.)

Keel.—Of oak 2 inches by $1\frac{3}{4}$ inches. It is scarped at the after end and tapered at the forward end, with a bevel for the planking. See detail.

Keelson.—Of oak, $\frac{3}{8}$ inch by 4 inches wide. It may be made up in two pieces, butted between the frame with an oak butt block about 18 inches long securely riveted or screwed to each end. It is best to butt it if necessary some place forward of No. 4. This piece is parallel except the forward end which tapers into the stem, as shown in plans. The edges are beveled so as to form a back rabbet for the plank; this is easily done when it is in place on the frame.

Grub Strake.—Of oak, yellow pine or spruce, $\frac{3}{8}$ inch by $2\frac{3}{4}$ inches, and parallel the whole length. It has varying bevel which can be taken from the mould but is easier cut when in place.

Stringers, Slamps and Shelf.—Of yellow pine or spruce all $\frac{3}{4}$ inch by $1\frac{1}{4}$ inches, and should be easy to get in one piece. Their approximate location is given on the sections, but the notches for these in stem, frames and transom battens should not be cut until the boat is set up. Also it may be advantageous to shift them a little to accommodate the widths of planking obtainable.

Setting Up.—With the foregoing gotten out, the boat can now be set up. If a level place is not easily available stretch a chalk line level and build up level place with pieces of F boards and shims commencing at the stem and every frame station back to the stern the distance apart of the frame stations, as given in the construction plan, 3 feet $1\frac{3}{4}$ inches in each case, except from No. 6 to the stern, which is 3 feet $1\frac{1}{2}$ inches. A level board on edge will serve the same purpose as shimming up the floor, but this should be properly stayed and braced, and made straight sideways as well as on top when the frame stations are laid off and the center line drawn in, erect one of the central frames by turning it upside down, the upright piece resting on the base line you have laid off; plumb this fore and aft and sidewise and then stay it securely as shown in sketch; set up every other frame in the same way. An easy way to do this is to take a long patten, say one of the stringers and lay it on the base line and then mark on it the location of each frame station, then raise it up about $2\frac{1}{2}$ feet parallel with the base. Then if in erecting the other frames you bring the same edge of the center stay of each mould to the corresponding mark on the bottom, they will be parallel to the frame already set up and will be plumb fore and aft. Plumb it sideways. Stay them all securely in place, set up the transom with its center line in line with the center line of the frames and with its bottom edge $\frac{5}{8}$ inch off the plumb tumbling in. Next lay the keelson on top of the frame with its center line at the center line of each frame

and attach the after end to the transom. The stem can next be put in place, with its head on the station "O" mark on the base, the keelson will fix its position fore and aft and it should be plumbed sideways. Now stretch the keel on the top of the keelson starting forward.

The stringers and grub strake will be the next to put in place but before cutting in the grub strake or any of the stringers, it would be well to run one along the deck sheer points, merely tacking it to the frames to see if this is fair both in the up and down and thwartship directions. Also run one along the bilge to see if the knuckle line is fair as, in setting up, a little variation will throw these points off. If they do not come fair, look and see where the trouble is, one frame may be a little to the starboard and another a little to port, or one may be a little higher and the next a little lower than it should be. One frame may also be a little fuller than the sections and another a little slacker and while the difference may only be very slight the two coming close together in opposite directions, magnifies their incorrectness. If on looking along the deck line one frame looks to be a little fuller, let it out slightly, but before doing this marks should be put on the frame and batten so you can see how much you move it and get the two sides alike. With these temporary battens on both sides of the boat it is easy to see whether one frame is canted more one way than it should be. It is very important that all these points be fair before putting battens on and starting to plank. When this is done, the battens can be cut into the frames, and their approximate location is given on the plans, but they may be moved a little one way or another in order to favor the planking the builder can most easily get. These battens should be fair when in place, in order that the planking lines look well. In cutting in the grub stringer allow for the bevel of the bottom so that when the grub strake is in position, its inner edge is level with the bottom of the frame. Bevel them off so as to form a landing for the bottom planking; these should be fastened in place with $1\frac{1}{4}$ inch No. 10 screws or $1\frac{1}{4}$ inch nails. The stringers should also be fastened to the frames with $1\frac{3}{4}$ inch No. 10 screws or nails. The after end of the stringers and grub are let into the transom cleats and the forward ends into stem as shown in sketch.

Deadwood.—This is oak and gotten out of about 3 inch stock, of course this will depend somewhat on the size of the shaft used, but this is large enough for shaft up to $1\frac{1}{2}$ inches. As the boring of the shaft hole is difficult work and requires special gear that the amateur can not always get, the method that has proven successful and easy to construct is shown, and consists of making the shaft log and deadwood up in two pieces and lapping one by the other the shaft hole can be gauged out of each piece before it is

put together and the upper part, or the part nearest to the hull, can be fastened to the keelson before the other part is riveted to it. Particular care should be taken in making up these joints, so as to have a good fit and plenty of white lead should be used. The seams can also be caulked, should they leak and stopwaters should be placed as shown on plan where the seams cross the lines of the planking. The dimensions of this deadwood and shaft log can be gotten from the figures on the plan and it would be well, while the boat is bottom side up, to correctly fit and fasten it to the keelson, but before doing this, the continuation of the shaft hole should be carried through the keelson.

Bottom Planking.—The bottom planking had best next be put on. Start with the garboard or the strake nearest to the keel and at the after end, lay the piece of $\frac{1}{2}$ inch stock that has been gotten out for this purpose on the frames and move it up as close to the keel as it will lay, fasten this piece temporarily in place so that it lays firmly up against all the frames. If you have no hand screws, it may be shored down from the ceiling or fastened in any other convenient way. Take a pair of dividers, or anything with which you can run a line on this board parallel to the keel, cut the edge of the board to this line, which will let the board very nearly fit up against the keel and can now very easily be fitted by seeing where it needs a little taken off. In fitting it up against the keel, the edges of the board should be planed to leave the seams open on the outside for caulking. Before it can be fitted up to the stem, the rabbet in the stem will have to be pared to fit and this can be done by taking a limber piece of batten or wood and running it the same as the planking would run up to the rabbet; from this it can be seen where the stem will have to be pared in order that the planking will lay fair in the rabbet. When the inner edge of this plank is fitted in position up against the keel, the other edge will overlap one of the bottom battens, so when the plank is in position, mark with a pencil along the inner edge of this batten on the planking, and by adding to this half the thickness of the batten the other edge of the planking is gotten. The fitting of the other planks is practically the same. It should be remembered however, in fairing the plank nearest to the bilge that sufficient width should be left to allow for a mitre joint. See detail.

The boat can now be turned over, and when this is done it should be plumbed up again and the water line should be approximately on a level. Stem should be plumbed sideways and stayed, stern board should be plumbed sideways and stayed which will insure the boat being built without a twist in it.

Side Planking.—The side planking should be fitted in the same way commencing with

(Continued on page 83.)

Table of Materials for Building the 22-Foot V-Bottom.

Name.	No. Pieces.	Material.	Length.	Width.	Thickness.	Name.	No. Pieces.	Material.	Length.	Width.	Thickness.
Keel	1	Oak	15'	$1\frac{3}{4}$ "	$\frac{1}{2}$ "	Covering board	1	Oak or mah.	9' 3"	6"	$\frac{3}{8}$ "
Keelson	1	Oak	20' 6"	4"	$\frac{3}{8}$ "	King plank	1	Oak or mah.	4' 9"	6"	$\frac{1}{2}$ "
Stem	1	Oak	3' 9"	11"	$\frac{1}{2}$ "	2nd King plank	1	Oak or mah.	4' 9"	6"	$\frac{1}{2}$ "
Stem knee	1	Oak	4' 3"	15"	$\frac{1}{2}$ "	Rd. dk. covering board	2	Oak or mah.	7' 0"	8"	$\frac{3}{8}$ "
Transom†	2	Oak or mah.	3' 3"	9"	$\frac{3}{4}$ "	Rd. dk. covering board	2	Oak or mah.	3' 5"	6 $\frac{1}{2}$ "	$\frac{3}{8}$ "
Transom cleats	2	Oak	3' 0"	$1\frac{3}{4}$ "	$\frac{3}{4}$ "	Side coaming	2	Oak or mah.	11' 0"	8 $\frac{1}{2}$ "	$\frac{3}{8}$ "
Transom knee	1	Oak	1' 9"	9"	$\frac{1}{2}$ "	After coaming	1	Oak or mah.	3' 2"	6"	$\frac{3}{8}$ "
Grub	2	Oak, y. pine or spruce	23' 0"	$2\frac{3}{4}$ "	$\frac{3}{8}$ "	Eng. hatch cover	6	Pine or cedar	3' 3"	7 $\frac{1}{2}$ "	$\frac{3}{8}$ "
M. D. clamps	2	"	23' 0"	$1\frac{1}{4}$ "	$\frac{3}{8}$ "	Breakwater	2	Oak or mah.	3' 9"	5"	$\frac{3}{8}$ "
R. D. clamps	2	"	10' 0"	$1\frac{1}{4}$ "	$\frac{3}{8}$ "	Eng. hatch fram.	6	Oak or y. pine	3' 3"	$1\frac{1}{4}$ "	$\frac{3}{8}$ "
Side stringers	4	"	23' 0"	$1\frac{1}{4}$ "	$\frac{3}{8}$ "	Flooring	5	Pine	18'	10"	$\frac{3}{8}$ "
Bottom stringers	4	"	23' 0"	$1\frac{1}{4}$ "	$\frac{3}{8}$ "	Seats, strips	9	Pine, cedar, oak or mahogany	4' 6"	3 $\frac{1}{2}$ "	$\frac{3}{8}$ "
Shelf	2	"	23' 0"	$1\frac{1}{4}$ "	$\frac{3}{8}$ "	Seats, cleats	8	"	4' 6"	1 $\frac{1}{4}$ "	$\frac{3}{8}$ "
Frames (about 52 ft.)	3	Oak	2' 6"	1 $\frac{1}{4}$ "	$\frac{3}{8}$ "	Lazyback cleat	9	"	4' 6"	3 $\frac{1}{2}$ "	$\frac{3}{8}$ "
Floors†	3	Oak	30-27-18	5"	$\frac{1}{2}$ "	Lazyback cleat	4	"	12"	3 $\frac{1}{2}$ "	$\frac{3}{8}$ "
Eng. floors	3	Oak	30-27-18	5"	$\frac{1}{2}$ "	Bulkhead staving	17	"	1' 8"	3"	$\frac{7}{16}$ "
Eng. girders	2	Oak	6' 3"	abt. 13"	$\frac{1}{2}$ "	Bulkhead cap.	1	"	4' 6"	3"	$\frac{3}{8}$ "
Skeg and shaft log	2	Oak	1' 9"	5"	$\frac{3}{4}$ "	Control panel	1	"	21"	6"	$\frac{3}{8}$ "
Horn timber	1	Oak	1' 9"	5"	$\frac{3}{4}$ "	Tank beams	2	Pine	3' 6"	8"	$\frac{3}{8}$ "
Side planking**	6	Pine or cedar	23'	8 $\frac{1}{2}$ "	$\frac{1}{2}$ "	Reverse gear cov.	1	Oak or mah.	3' 0"	19"	$\frac{3}{8}$ "
Bottom planking	6	Pine or cedar	23'	11"	$\frac{1}{2}$ "	Rudder	1	Oak	4' 0"	2 $\frac{3}{4}$ "	$\frac{3}{8}$ "
Deck beams	6	Oak	4' 4"	$1\frac{1}{2}$ "	$\frac{3}{8}$ "	Sampson post	1	Oak or mah.	2' 0"	2 $\frac{3}{4}$ "	$\frac{3}{8}$ "
Beam battens	8	Oak, y. pine or spruce	9' 4"	$1\frac{1}{4}$ "	$\frac{3}{8}$ "	Eng. cover facing piece	2	Oak or mah.	2' 0"	2 $\frac{3}{4}$ "	$\frac{3}{8}$ "
Decking, Rd. dk.		Wh. pine or cedar	6' 3"	$\frac{1}{2}$ "	$\frac{3}{8}$ "	*Can be in 2 lengths. †Can be in 1, 2 or 3 pieces. ‡Floor on No. 1 is 7" wide and 12 ft. long. **Top strake in way of raised deck—7" wide and 9' 6" long.					
Decking, Main dk.		Wh. pine or cedar	2' 9"	$\frac{1}{2}$ "	$\frac{3}{8}$ "						



Hitting the high spots.
North Sea is a thirty-foot runabout, owner by Mr. W. E. Lloyd, of Buffalo. She is powered with a 30-45 h.p. Sterling and easily does twenty miles.

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The Problem of the Rudder.

A Discussion of the Position and Design of the Rudder to Obtain the Best Control. The Effects of Various Combinations and Suggestions for Installing.

By Harold Whiting Slauson.

A CERTAIN cynical writer has given it as his opinion that the reason all boats are called "she" is that they are often capricious, no two can be handled alike, and each has her peculiarities which only her lord and master can understand and be prepared for—and even he is liable to be fooled when a squall arises.

Whether our friend's opinion of women coincides with ours matters not, but any man who has had occasion to run several motor boats at various times will realize how each has its individual characteristics which seem almost to endow it with a personality, and that, regardless of the fact that in size, model and power equipment they may be identical, no two can be handled alike. This difference in the

Another consideration which must be recognized as a distinct disadvantage of an unduly large rudder is the greater power required to turn it, and the heavier and more clumsy wheel, tiller and cable necessary to overcome the tremendous resistance of the water against the increased surface. Furthermore, although a large rudder will enable a boat to turn more sharply than can a smaller one, it cannot be moved so quickly, and the turn, consequently, cannot be made as suddenly as in the latter case—and in an emergency a sudden turn is often of more value than a sharp one. In this, as in many other cases, however, it is the "happy medium" which is desired.

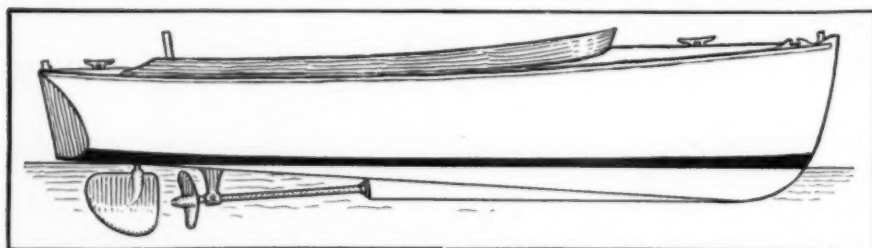
The location of the rudder is not a difficult problem to solve in the case of the average

small, owing to the restricted area of the triangle formed by the keel, the propeller shaft and its hanger—for it is in this space that the rudder must be placed. A greater space could be afforded by lengthening the hanger and thereby increasing the angle at which the shaft leaves the keel, but this is poor design, for the plane of revolution of the propeller should be as nearly perpendicular to the surface of the water as is possible, in order to obtain the most efficient results from the power of the motor.

Still another method of avoiding the "wake" from the propeller is that of hanging the rudder to one side of the center line of the boat. This method is being employed extensively in France and also in England, and it would seem from the number of boats thus equipped that it is a success, and although but few boats have been thus equipped in this country, the practice will doubtless become more popular in racing practice.

The effect of this moving water is not undesirable in slowly moving boats as it makes possible steering and maneuvering when practically motionless, but on racing craft nothing is to be gained by it, and its retarding effect is to be avoided.

Although it was mentioned above that the reaction of the water from the propeller against the rudder serves to absorb power which would otherwise be converted into speed, this very reaction increases the efficiency of the rudder when turned in either direction. This is due to the side push given the rudder when any portion of its flat surface is struck by the back rush of water from the propeller, and the resultant of this force tends to swing the stern, independent of the fact that the boat is moving forward through the water. This effect would be noticeable if the boat could be fastened at its center so that it would be free to turn about this point as a pivot, and yet could move neither forward nor backward. If the motor is started and the rudder turned to one side or the other, the boat will swing in the opposite direction. If this same experiment was tried with a boat, the rudder of which was located forward of the propeller, no turning effect would be noticeable—unless the rudder was placed very near the propeller, in which case the pull of the water would probably exert a slight turning force. This demonstrates the fact that, under ordinary conditions, a sharper turn can be made when the motor and propeller are running than will be



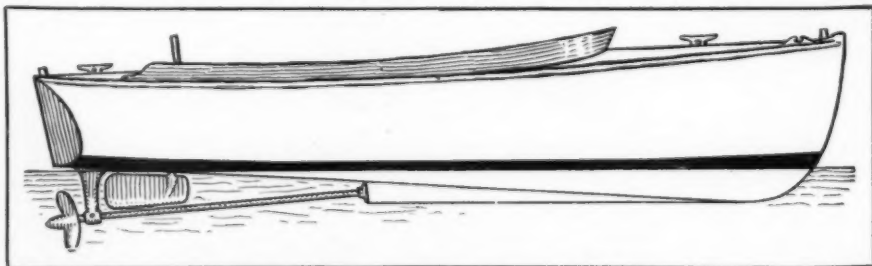
The counterbalanced rudder hung in the usual place aft of the propeller.

performance of similar boats under the same conditions is probably due more to the size, shape and location of the rudder and the arrangement of the "steering gear" than to any other feature of construction. "As helpless as a ship without a rudder" has always meant the extreme of disability. To be sure, with the advent of twin and triple screws, vessels having a crippled steering gear have been guided nearly across the Atlantic. But it is only in the larger vessels that twin-screws are used, and in the average motor boat, a good rudder is as necessary as a propeller.

Rudders will vary in size from those having an area of half a square foot in use on a 16-foot "runabout" to sheets of steel or bronze eight or ten times that size for the 60-foot cruisers. While no mathematical rule can be stated by which the exact size of rudder for a given length of boat can be determined, its area should be from one-fifteenth to one-tenth the area of the submerged portion of the hull seen in profile, depending upon the shape of the boat's underbody. If the rudder is too small, the hull will turn slowly and will require a large space in which to travel the 360 degrees, for the inertia of the boat and motor must first be overcome before the course can be changed, and the drag or turning force of a small rudder will be almost entirely lost in the "slip" between it and the water.

Although it may be said that the larger the rudder, the more quickly will the boat turn and the smaller will be the circle which it can describe, this only holds true within certain limits, and a rudder which is too large for the hull has its disadvantages as well as one which is too small. In the first place a large rudder and its post will not only be an added weight at the stern of the boat, but will increase the resistance when the hull moves through the water. It would seem that this resistance would be of no consequence when the rudder was held perfectly straight with the keel of the boat so that only its edge cuts through the water, but the increased size of the post, the added "skin friction" of the water on the surface of the rudder, and the extra weight all combine to form an element which will seriously retard the speed of a racer, and one which must be reckoned with even in pleasure boats.

pleasure boat, for modern design unites in placing it at the stern from six to twelve inches aft of the propeller. It is at a point near this, however, at which the greatest reaction, or push, of the propeller against the water is obtained, and the rudder naturally receives much of this energy, particularly when turned to either side. Since the rudder is a part of the boat and moves with it, the energy expended in reaction against any part of it is lost, and in high speed boats this is a factor which must be reckoned with. In order to have no obstruction in the reacting water aft of the propeller, some racers have been designed in which the rudder was located a few feet from the bow. This gave clear water for the operation of the propeller, and the boat could be steered satisfactorily. The bow rose out of the water to such an extent while at high speed, however, that it was necessary to make the rudder post long in order that the rudder remain submerged, and this caused a greater draft when the boat was at rest or under slow speed than would have been the case had



To get the propeller farther aft and to avoid the water projected by it, the rudder is often hung forward of the strut.

the rudder been located in the usual position.

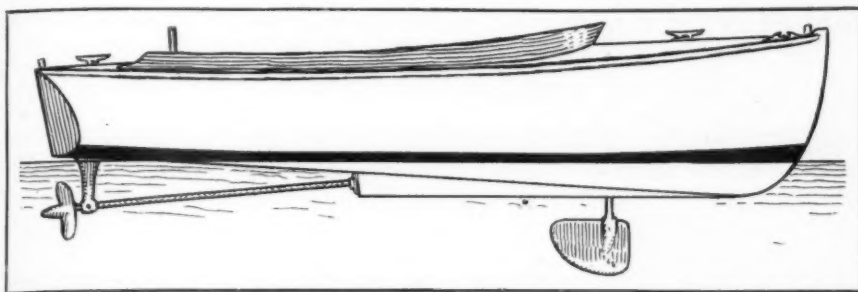
In order to give the propeller free water in which to act, and at the same time to overcome the disadvantages found by locating the rudder at the bow of the hull, some racers have been designed in which the rudder was placed just forward of the wheel between the hanger and shaft log. In other words, the ordinary positions of the two were just reversed. This design is satisfactory in some respects and will probably allow of the highest speed, but the rudder must necessarily be

the case when the clutch is thrown out or the engine stopped and the boat is merely drifting under her own momentum.

The position which a rudder naturally occupies when a boat is in motion is in the same vertical plane as that in which the keel of the boat lies. In this position the reaction of the water on either side is equalized and a minimum resistance to the speed of the boat is offered. As the rudder is turned out of this plane when the boat is in motion the resistance of the water increases in proportion to the

amount of this angle. In other words, the more a rudder is turned, the greater will be the force required to hold the tiller. Even in small boats this amounts to a force which is sufficient to break a stout rudder line if the steering wheel is moved too suddenly, and in craft other than the slowest of slow tug

turned 90 degrees from the line of the keel, and consequently there is nothing to be gained by providing for more than a 90-degree swing from one extreme position of the rudder to the other. In fact, provisions should be made to prevent the rudder from ever moving more than 45 degrees out of line with the keel,



The rudder forward has the disadvantage of lifting out when at speed unless the post is comparatively long.

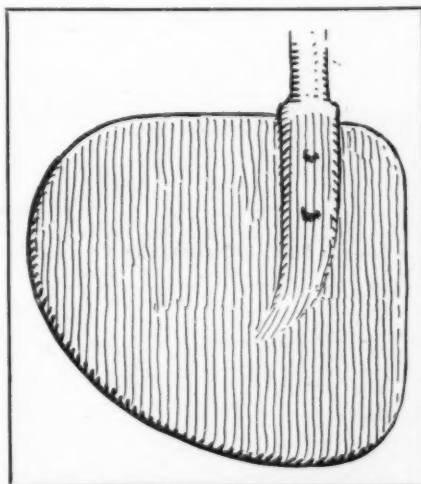
boats and scows, a slight counterbalance should be provided in the rudder. This can best be obtained by fastening the rudder post to the rudder at a point from one-third to one-fifth of the way back from its forward edge. This provides a surface which assists the turning and helps to overcome the resistance offered by the larger surface. If the rudder post is set too near the middle of the rudder, the counterbalance will become too great and difficulty will be encountered in keeping the boat in a straight line. A rudder should naturally assume a neutral position, and if it is so mounted that it has a tendency to turn in one direction or the other, a condition is established which is far worse than no counterbalance whatever.

It is really remarkable to what an extent a small counterbalance will affect the "feel" and efficient handling of a small motor boat. The writer has in mind the case of a 30-foot cabin boat which was equipped with a rudder of sufficient size to enable the craft to be turned in about three times her own length. There was scarcely any counterbalance provided, however, and in consequence the stoutest rudder chains and cables were broken occasionally when the rudder was thrown hard in one direction or the other. In addition to this, owing to the tremendous resistance of the large surface, it was practically impossible to steer the boat on the backup, and the rudder had to be held in its neutral position or thrown to its limit on one side or the other in order to relieve the excessive strain on the chains and cable. Finally the rudder was dismounted and a blacksmith engaged to set the post three inches farther back on the surface. The results were surprising. The boat turned as sharply as before, but much more suddenly, and no more effort was required to move the rudder through its full swing than was formerly necessary to turn it through an arc of fifteen or twenty degrees. The entire "feel" at the steering wheel was changed; the boat would respond to the slightest touch, the control was infinitely smoother and more accurate than before, and on the backup the rudder could be turned from one side to the other with no danger of snapping a chain, and all due to a three-inch shift on the rudder post! The only disadvantage found was that the rudder was set three inches nearer the propeller than before, but as control was of first importance with the boat in question, and speed was only a secondary consideration, this objection was practically negligible, and it was a case of "everything gained and nothing lost."

As stated in the preceding paragraph, the power required to turn the rudder increases until the tiller has moved through an arc of 90 degrees and lies at right angles to its former position. But although the resistance offered by the rudder increases until it has moved through an arc of 90 degrees, its turning effect on the hull does not increase with the swing of the tiller beyond 45 degrees. With the rudder moved 45 degrees the boat will swing as sharply as though the tiller had been

for not only beyond this point does there cease to be any additional turning effect on the boat, but the increased resistance of the rudder will materially reduce the speed of the craft. Furthermore, inasmuch as the tendency of the rudder on the back-up is to turn through half a circle and point in the opposite direction from its normal position, all of the strain in preventing this must be taken by the steering cable or rope unless a stop of some kind is provided.

Probably the most common form of stop is a chain, one end of which is attached to the upper rear corner of the rudder, and the other screwed securely to the counter. This chain is of sufficient length to allow the rudder to swing 45 degrees in either direction—but no more—and it should be stout enough to carry the entire strain of the resistance of the water against the surface of the rudder when the boat is on the back-up. While this chain will effectually keep the rudder within the desired limits, its exposed location renders it easily broken by any obstruction, and in shallow waters it will be found to be a lodging place for all kinds of weeds, bull rushes, eel grass, and the like. On this account it is much better to provide a stop for the tiller, rather than for the rudder, if the former swings out of the way between covered decks. In this case two wooden cleats may be fastened to the underside of the stern or to the sides of the hull in such a position that the end of the tiller



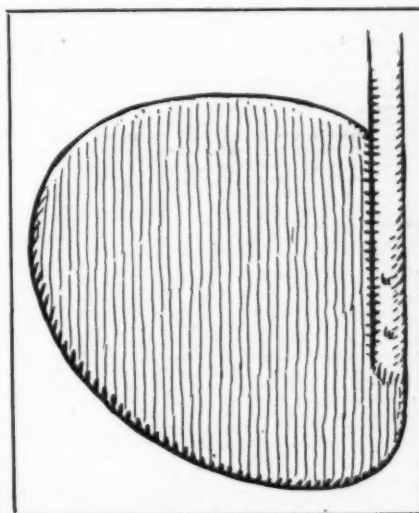
The counterbalanced rudder greatly reduces the strain on the steering gear.

will strike one or the other when the limit of its swing has been reached.

Although two rudders of entirely different shapes can have the same area, one may be more efficient than the other, owing to the proportion of its dimensions. It is evident that a rudder which is longer than it is high will be more effective in turning a boat than

one of which the reverse is true, for the greater length will furnish an effective surface at a greater distance from the keel, and more leverage for turning the hull out of its straight course will be provided. This does not mean, however, that all rudders should be longer than they are high, for this increased leverage formed by the extended surface will furnish a resistance which will make the tiller of such a rudder exceedingly difficult to turn, and if sufficient counterbalance is provided to overcome this trouble, the efficient operation of the propeller may be interfered with. On the other hand, a rudder which is considerably higher than it is long (or wide), while turning easily, will not give the same control to the boat as would one of the same area but of different proportions. Furthermore, a rudder should never be so long that it will extend more than two or three inches below the bottom of the propeller, for this will only serve to increase the draft unnecessarily. If a skag is used, it should be made to include the rudder, and thus protect it, as well as the wheel, from portions of the stream in which the "bottom comes too near the top."

If it is decided to use a long, low, or shallow rudder, it should be so placed that the upper edge will lie several inches below the



The rudder is usually attached to the post at its forward edge.

surface of the water when the boat is at rest. This will be necessary so that the effective surface of the rudder will not be up in the air half of the time if the boat should be plunging in a heavy sea, for it is at such a time that the maximum steering power will be required to keep the craft "head on." A rudder, the upper edge of which is set several inches below the surface of the water, will also give much better control on the back-up, for when the average small motor boat is reversed, there is a tendency for the stern to rise out of the water, and unless the rudder has been well "buried," there will not be sufficient steering surface remaining to handle the boat effectively.

In view of these statements, it is evident that what holds true in many phases of motor boating applies to the design of a rudder as well, and that it is the "happy medium" which will give the most efficient and satisfactory service.

This happy medium will vary to such an extent for various motor boats under different conditions that it will be impossible to set down a hard and fast rule to follow, but it is probable that a rudder nearly square will serve the purpose satisfactorily in the majority of cases. This can be varied slightly, of course, to meet the local conditions and peculiarities in the design of the stern of the hull. The corners of the rudder should be rounded so that weeds and grass will not be collected from the surface or dug up from a shallow bottom so easily.

The \$20,000-\$50,000 Motor Boat.

The Tenth Instalment of the Series "How Much Does a Motor Boat Cost?" Typical Examples of What May be Had for Prices Within This Range.

[This instalment of the "Cost Series" includes a number of typical examples of the \$20,000-\$50,000 motor boat. The \$50,000-\$100,000 classification will be the next and last instalment of this series and as some of the designers are preparing plans especially for it, it should be of special interest, as showing the very highest development of the up-to-date motor yacht.—EDITOR.]

Two Elco Cruisers.

The 98-footer shown below is one of the two of this size recently turned out by the Electric Launch Company, of Bayonne, N. J. She is heavily constructed and is equipped with two 75-h.p. six-cylinder motors driving twin screws. The principle dimensions are length over all 98 ft., beam 16 ft., draft 4 ft. 6 in., and the speed is 15 miles per hour. This represents about the largest craft that can navigate the Erie and Champlain canals.

The 78-footer on the opposite page is equipped with two six-cylinder, 40-horse engines, giving her a cruising speed of 13 miles per hour. Her beam is 14 ft. and her draft 4 ft. The prices of both these boats vary greatly with accommodations, finish, power, etc., but would lie between \$20,000 and \$50,000.

A Seabury 90-footer.

Shown on the opposite page is the design of a 90-ft. twin-screw motor yacht recently designed and now under construction at the yards of the Gas Engine & Power Company, and Chas. L. Seabury & Co., consolidated. She will be equipped with two six-cylinder air starting and reversing engines of 130 h.p. each, with which a guaranteed speed of 16 miles per hour will be obtained. As may be seen from the design, these are installed well forward and are in easy communication with the pilot house directly above. The fore-cabin with accommodations for several men occupies the space forward of this compartment and the living quarters are amidships. Separated from the living quarters by bulkheads, between which is located the fuel tank of 1,000 gallons, the galley is aft. There are two deck houses and the most original feature of this boat is that the larger one, which is used as a dining saloon, is aft, with the smaller pilot house forward.

A Hacker-Pouliot 90-footer.

On the second page following is shown the design of a 90-footer of 16 ft. 4 in. beam and 4 ft. 6 in. draft, designed for all-around cruising by the Hacker-Pouliot Boat Company (formerly the Detroit Launch & Power Company), of Detroit, Mich. The construction is very heavy throughout, being of white oak planked with yellow pine or cedar, galvanized fastened and plugged. A boat to this design, while planned for twin screws, has installed a 300-h.p., six-cylinder motor, and attains a speed of 16 miles per hour. There are accommodations for fourteen persons besides the crew. The price, completely equipped, ready for cruising, would lie between \$23,000 and \$30,000.

Homer 80-foot Sea-Going Cruiser.

Arthur P. Homer, of Boston, has recently designed an 80-ft. sea-going cruiser of 14 ft. 6 in. beam and 5-ft. draft, which will cost approximately \$25,000. The power equipment consists of two 60-h.p. heavy-duty Sterlings that will drive her about 12 miles per hour. Forward is the fore-cabin, officers' quarters and galley. The dining saloon is a sunken deck house and the living quarters aft consist of three staterooms, a large main cabin and bath room. The boat is provided with an auxiliary schooner rig.

A Luders 106-footer.

The wash drawing shown at the bottom of this page is a 106-footer of clipper lines, designed and now being constructed at the yard of the Luders Marine Construction Company, Portchester, N. Y. Her beam is 13½ ft. and she draws 6 ft. of water. Her power plant is a 300-h.p. Standard engine and her fuel will be carried in three separate tanks of a combined capacity of 1,200 gallons. The boat is of unusually strong construction, the framing being of oak, planked with yellow pine, with a double diagonal skin inside the frames. The owner's quarters will be in the forward part of the boat aft of the fore-cabin, the engine room is amidships and the guests' quarters consisting of a large double stateroom, two smaller staterooms, vestibule, toilet rooms, etc., are aft. The cost will be under \$50,000.

An F. S. Nock 80-footer.

The inboard profile and plan on the second page following are of an 80-ft. cruiser of 14 ft. beam and 3 ft. 9 in. draft, designed by Frederic S. Nock. Under the raised deck and pilot house are the crew's quarters, with room for several men. The sunken pilot house connects directly with the galley, which extends the full width of the boat. The engine room, which is separated by two water-tight bulkheads from the rest of the boat, is amidships and contains the two four-cylinder, 8 x 10 engines, the gasoline tanks, dynamo, etc. A unique arrangement is provided in this compartment with which by simply pressing a lever the entire room may be sprayed with a mixture which will immediately quench gasoline flames. The price of such a boat would be from \$30,000 upwards, according to furnishings and fittings.

A 95-foot Racine Cruiser.

The 95-ft. cruiser which appeared on page 37 of the February issue and which was designed and is being

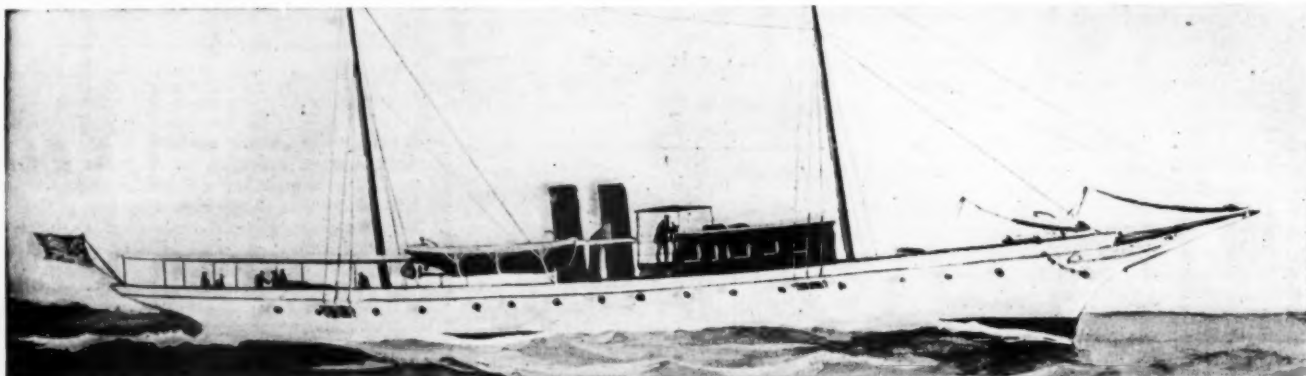
built by the Racine Boat Manufacturing Company, of Muskegon, Mich., comes within the \$20,000-\$50,000 class. The hull is an extremely seaworthy model, with canoe bow and stern, and the deck house divided into pilot house and saloon is amidships. The top of this structure is used as a bridge deck and this adds materially to the already large deck space. The accommodations below consist of a large, well equipped fore-cabin and staterooms for the engineer and captain forward, together with a bath room. The two 100-h.p. Standard motors occupy the space next aft with the owner's quarters consisting of three small staterooms, one large stateroom, bath room, toilet room and galley occupying the after part of the boat.

A Whittelsey 110-footer.

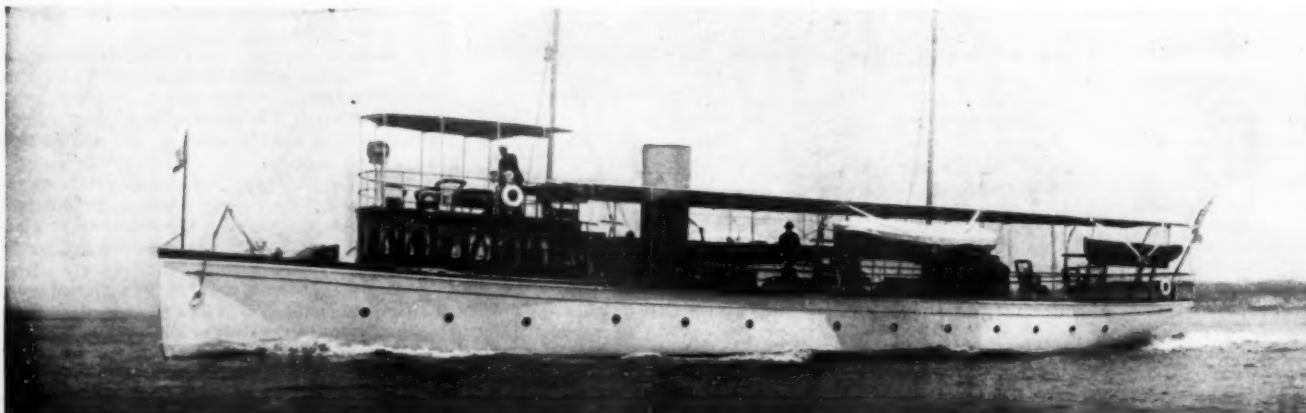
The 110-footer on the second page following was designed by Messrs. Whittelsey & Whittelsey, of New York. She is of the raised-deck type, with pilot house forward and cabin trunks extending aft. The hull is to be of steel, with steel water-tight bulkheads dividing the boat into seven compartments. The power plant will consist of two gasoline motors aggregating 250 h.p., which will give the boat a speed of 14 miles per hour. The three gasoline tanks have a total capacity of 2,000 gallons and are installed in a separate water-tight compartment amidships. This boat completely equipped with anchors, lines, launch, tender, awnings, etc., and fully furnished, will cost in the neighborhood of \$45,000, and it is estimated that she could be built of wood for \$41,000.

The Matthews 120-footer.

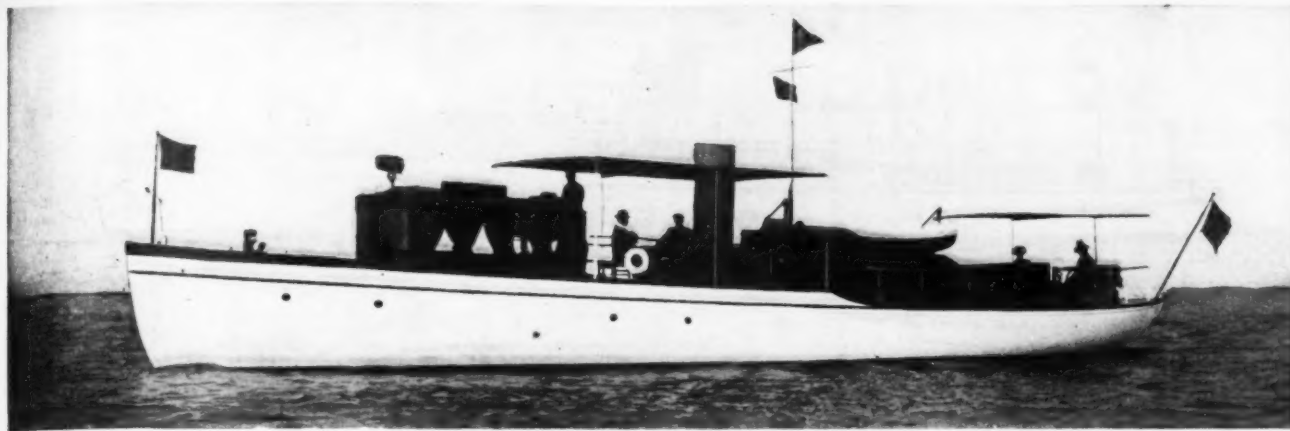
At the bottom of the page opposite is shown a 120-footer of 17 ft. beam, designed by the Matthews Boat Company, Port Clinton, Ohio, and which could be built for \$36,000. She is of the double-house type with a trunk between, surmounted by two stacks. Accommodations below deck consist of a fore-cabin, captain's and engineer's stateroom, mess room, and store room forward with a full width galley next aft connecting by stairway with the dining saloon above. The engine room is amidships and contains the two gasoline engines besides the three fuel tanks of a combined capacity of 1,000 gallons and a separate lighting plant, work bench, lockers, etc. The living quarters extend aft from the engine room, consist of the owner's stateroom the full width of the boat, two staterooms and two bath rooms, occupying equal spaces on either side of the passage, a large saloon and two after staterooms. This part of the boat communicates by stairway to the music room above. The boat is of the flush-deck type, with raised bulkheads forward and aft.



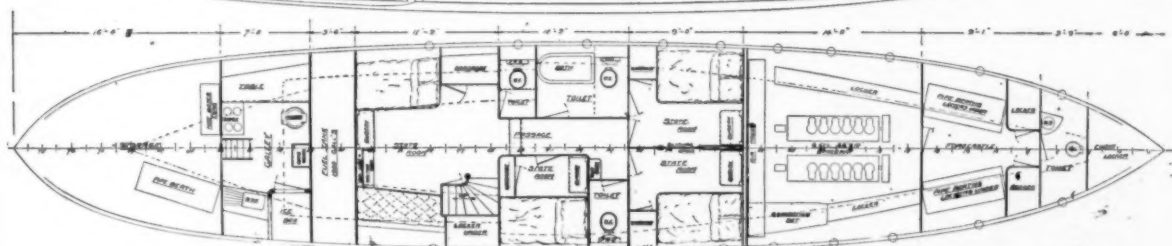
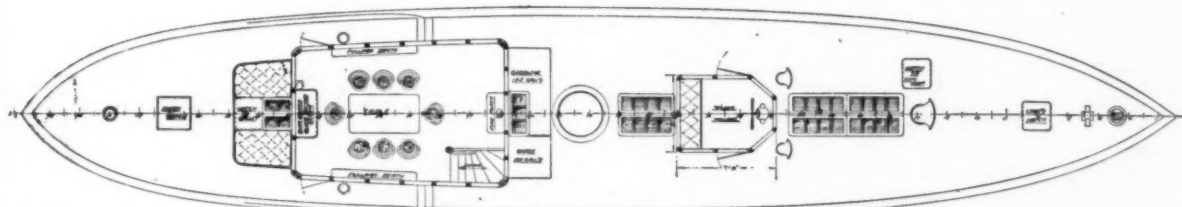
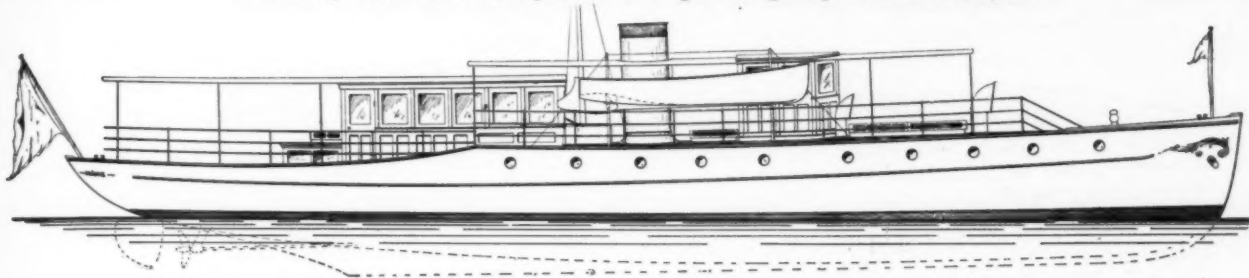
The 106-footer building by the Luders Marine Construction Co., will cost complete less than \$50,000.



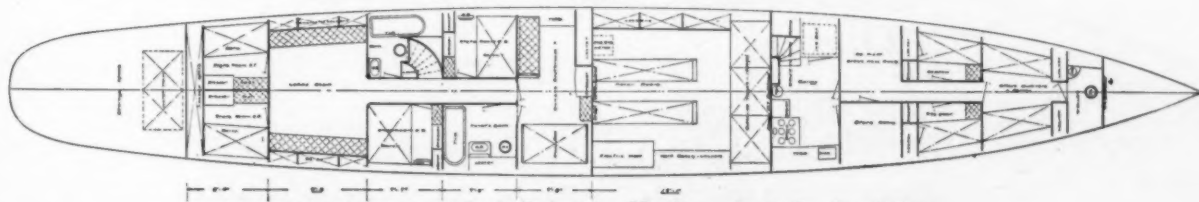
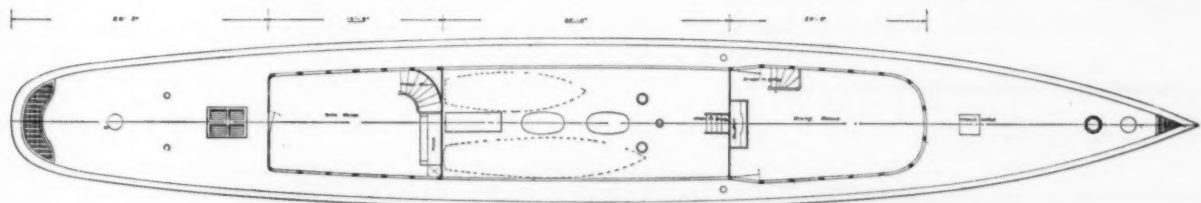
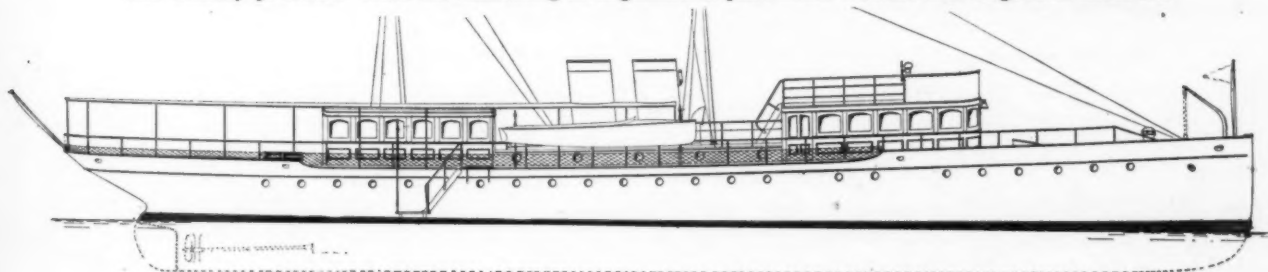
Paula, the 98-foot cruiser designed and built by the Electric Launch Co., could be duplicated for less than \$50,000.



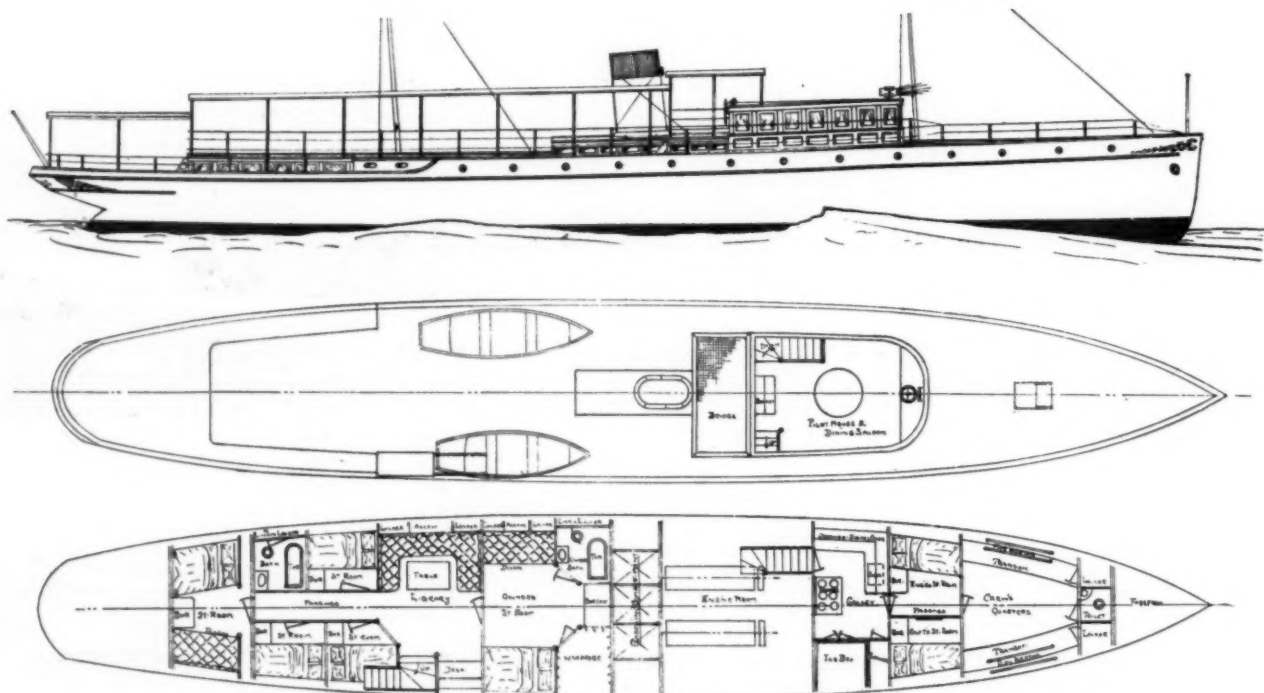
The Elco 78-footer could be duplicated for a figure not greatly in excess of \$20,000.



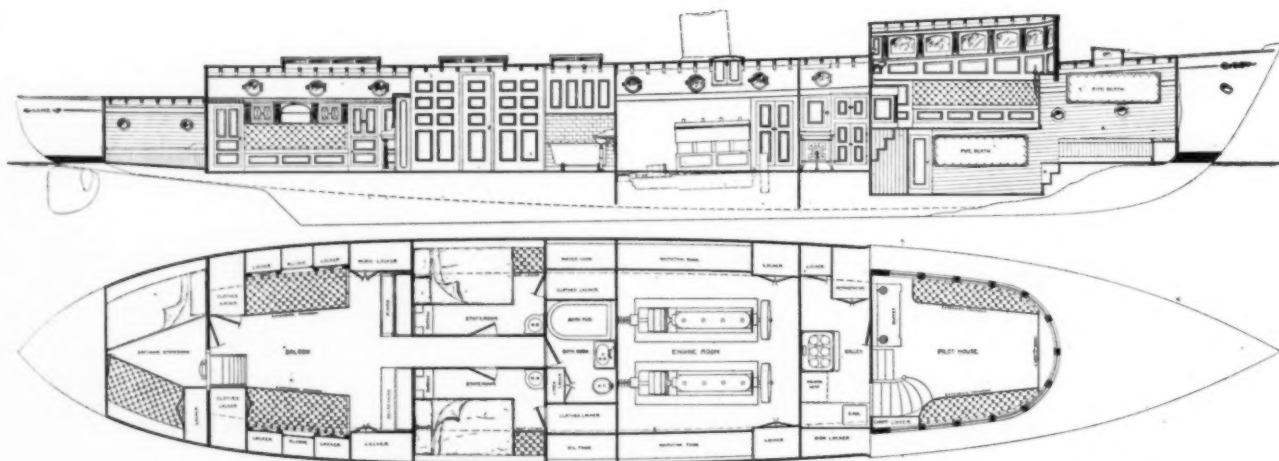
The Seabury 90-footer. Note the interesting arrangement of pilot house forward and large deck house aft.



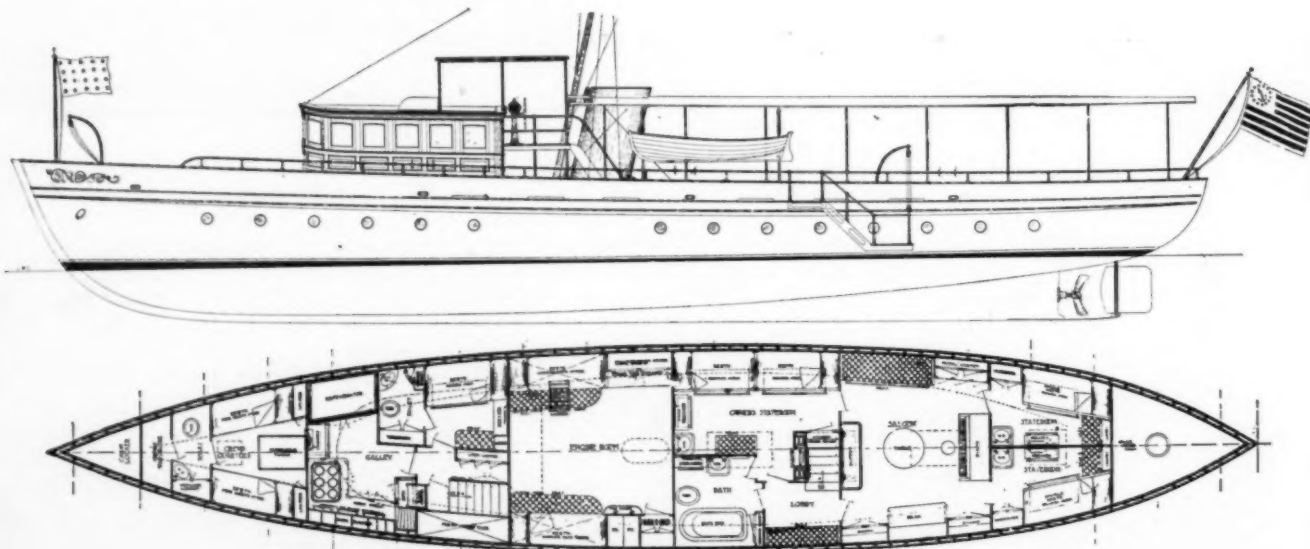
The 120-footer that will be built by the Matthews Boat Co. for \$36,000.



The Whittelsey 110-footer will be built of steel for \$45,000 and could be constructed of wood for \$41,000.



The price of the F. S. Nock 80-footer would be from \$30,000 upward according to furnishings and fittings.



The Hacker-Pouliot 90-footer could be had complete for a price between \$23,000 and \$30,000.

The New York Motor Boat Show.

Descriptions of Various Exhibits That Will Be Seen at Madison Square Garden.
The Two Weeks' Exhibition Under the Auspices of the N. A. E. & B. M.

Racine Boat Mfg. Co., Muskegon, Mich.
The Racine people will exhibit the 18-foot Speedabout together with a 36 ft. raised deck cruiser, both of which were described in the February issue in the forecast of the Boston Show. In addition to these they expect to display two new boats of which a brief description follows: The first is a 45 foot bridge deck cruiser, having a beam of 10 ft. 6 in. and a draft of 3 ft. It has a raised deck forward with a bridge deck over the engine room and a trunk deck covering the main cabin, owner's stateroom, toilet and galley. The interior accommodations comprise a large and completely fitted stateroom, the main cabin with extra wide transoms and folding upper berths which form backs for the transom seats; a large bathroom fitted with tub, lavatory and toilet and a commodious galley with stove sink refrigerator, etc. There are sleeping accommodations for eight besides the crew. Under the bridge the motor space is located, the motor to be according to the purchaser's option. On each side of the engine space are located cylindrical tanks containing 60 gallons each, enough to give a cruising radius of 300 miles. The fore-castle contains two folding pipe berths, two lockers and crew's toilet. The boat carries a dinghy in davits and a military mast. The upholstering and fittings will be standard and cover a complete cruising outfit, salt water equipment and electric lighting plant. The house, bulkheads and hatches are of mahogany and the interior is finished in white enamel and mahogany trimmed. The other boat is a 32 ft. De Luxe. This boat has an open cockpit, high freeboard and compromise stern. It has lots of lounging space, the machinery being concealed beneath the forward deck, with bulkhead control. The boat has a speed of from 12 to 13 miles and is powered with a 4 cylinder 25 h.p. four-cycle motor equipped with high tension magneto.

Harold W. Browne, New York City. Mr. Browne is going to exhibit an interesting little speed boat designed by Curtis D. Mabrey. The specifications are as follows: dimensions, 22 ft. x 4 ft. 2 in.; frame is of white oak $\frac{3}{4}$ x $\frac{7}{8}$ spaced on 6 inch centers; the planking is of $\frac{5}{8}$ inch clear cedar tapering to $\frac{1}{2}$ in. at sheer strake; deck is finished in mahogany, $\frac{1}{2}$ in. with $\frac{1}{2}$ in. mahogany coaming. It is finished bright above the water line with Henkes green bronze for bottom. The engine is a B. F. Brown, Model C type 8, three cylinder, $4\frac{1}{2}$ x $4\frac{1}{2}$ inches, developing 15-20 h.p. at 900 r.p.m. The propeller is a Sintz reversible, 20 in. diameter, 28 in. pitch with quadrant, the electric equipment consists of a storage battery and dynamo. Steering gear is of the automobile control type, spark and throttle on the wheel, the gasoline tank is a seamless cylinder with a capacity of 25 gallons. The equipment also includes Pantasote Cushions, running lights and mooring lights. She has a seating capacity of eight persons and a speed of 18 miles per hour.

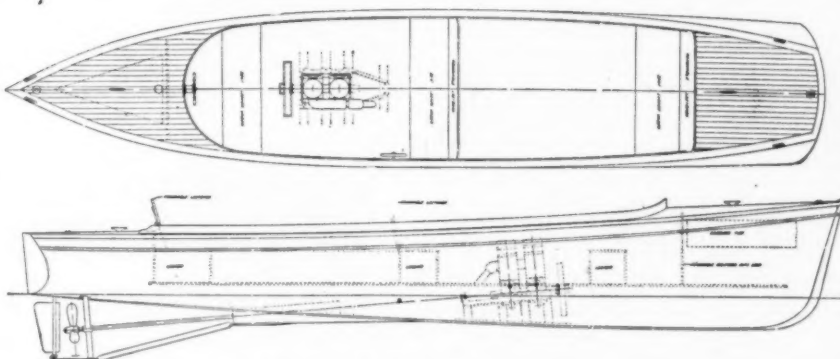
Chester M. Martin, Portchester, N. Y. Mr. Martin's exhibit will consist of three boats of different sizes, 12, 14, and 16 feet respectively. These boats are flat bottomed and especially designed for motor boat tenders, for which they are admirably adapted. The larger 16 foot boat is fitted up for fishing and is equipped with a 3 h.p. Watertown motor with which it does over 6 miles per hour.

Cleveland Auto Boat Mfg. Co., Cleveland, Ohio. A new 18 foot model will be shown which will replace the well known 17 $\frac{1}{2}$ footer. In this later model are incorporated a good many new features such as oak decks, air tanks both forward and aft, and a gasoline over-board drain which is placed on top of the gasoline tank so that in case any gasoline is spilled while filling the tank it does not fall into the boat. This outfit is also equipped with an under-water exhaust and with a side steering lever placed on the coaming next to the engine ensuring one man control. There is a seat placed over the top of the motor and this seat also covers the expansion chamber of the

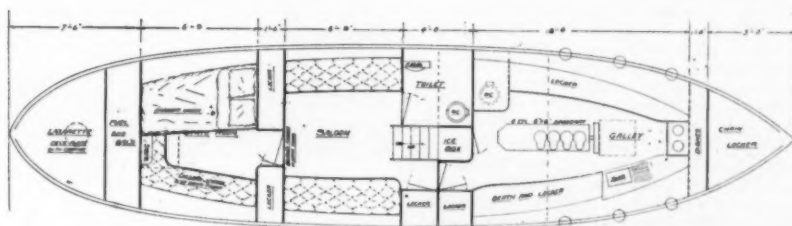
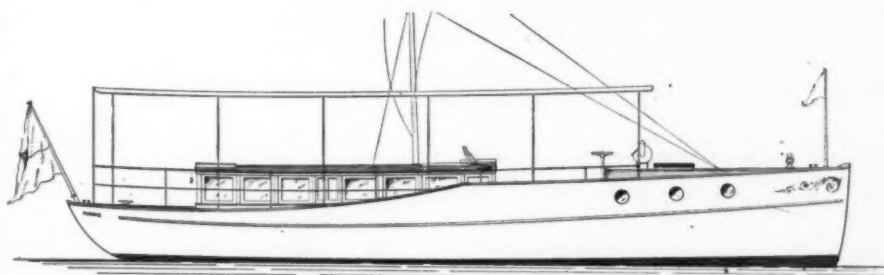
under-water exhaust. The battery is placed under a metal box so that practically all of the fittings are under cover, which adds a great deal in neatness of appearance. The planking is of the hollow and round system, each plank being edge-nailed as well as being fastened to the ribs. They are also marketing a 21 $\frac{1}{2}$ ft. model equipped with a 4 h.p. Ferro engine and reverse gear, also a 24 ft. boat with an 2 h.p. Ferro engine and reverse gear.

The Electric Launch Co., of Bayonne, N. J., will exhibit several of their latest productions among which the largest is a 1911 "Elco De Luxe," of which a brief description follows: The length of this boat over all is 54 ft., ex-

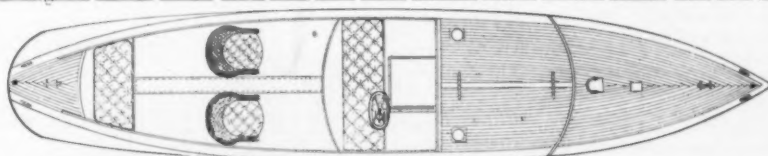
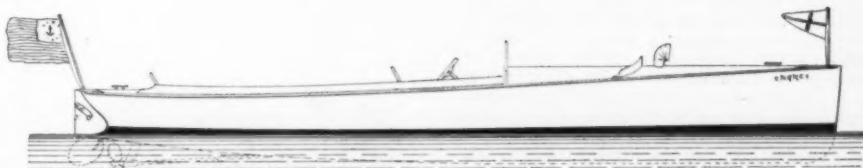
treme beam, 9 ft. 3 in., draft, 3 ft. The cabin is amidships, and there is a spacious open cockpit aft. This model will have full head room in the motor room, which is forward, and accessible through a sliding glass hatch of new design, affording unusual light and ventilation. A steering wheel with motor controls alongside is located at the forward end of the bridge deck. The main cabin is most luxuriously equipped, the wood work being in selected mahogany as are the ceilings, the panels being finished in white enamel. Plate glass mirrors will be used in the decorative scheme. The seating arrangement will be extension transoms or sofas so arranged as to pull out forming wide comfortable berths, if



The Fay & Bowen 25-foot special



The Gas Engine & Power Co.'s 45-foot bridge deck cruiser



The Reliance 21-foot speed runabout

it is desired to sleep on board. Hanging lockers and writing desks together with china closets will be installed in the cabin and adjoining this will be a galley and a lavatory, both completely equipped. The power equipment will consist of a gasoline motor from 60-75 h.p. of six cylinders, the gasoline tank of 100 gals. capacity. This boat will probably be the largest displayed at the Garden and will be of undoubted interest. A 40 ft. raised deck cruiser together with a 28 ft. raceabout, both of new design will complete the exhibit.

The Fay and Bowen Engine Co., Geneva, N. Y., will confine their display to the new Fay and Bowen 25 foot Special. This boat is 25 feet long by 5 feet beam and is an entirely different model from the 25x5½ footer shown in the catalogue. This Special model is roomy and staunch but has the modern radial stern, and a very sharp bow. The motor, a ten horse power double cylinder, is placed well forward and the boat is designed to make an actual speed of eleven miles per hour. She is planked with southern white cedar, her decks coaming sheer strake and plank-sheer are of oak, and the entire interior finish is of mahogany making an exceptionally handsome boat. Her rub strake is finished with a half oval polished bang strip. The stern seat is built straight across with a comfortable folding lazyback, a folding lazyback is also provided for the steersman's seat so that one may easily step over it. The cockpit between the steersman's seat and the stern seat is left open so as to accommodate chairs. With four wicker chairs, the boat has a comfortable carrying capacity of eleven persons. All cross seats are lockered, with locker face attractively paneled, and there is a roomy storage space forward under the tank, ahead of the forward bulkhead. A paneled door encloses this granting, affording easy access to tank and locker. In addition to the usual steering wheel forward there is an auxiliary control aft to the port side of the engine.

The W. H. Mullins Co., Salem, O., will exhibit a very complete line of boats among which, of especial interest, will be their well known Monel-metal boat equipped with a Loew-Victor thirty h.p. four-cycle four cylinder engine, cast, en bloc. They will also exhibit a very complete line of boats ranging in price from \$115 to \$2,500 as follows: A 26 ft. 20 h.p. auto boat (Monel-metal), constructed of what is claimed to be an absolutely non-corrosive metal, with a high class power plant, silent under-water exhaust, pressed steel automobile seats and automobile control. This model comes in either galvanized steel or Monel-metal and in 26 or 28 foot lengths. All of the Mullins new 1911 Leader models will be equipped with Ferro engines, one man control, and silent under-water exhausts, power plant entirely under cover, air tight compartments and all of the Mullins features. They will exhibit a 24 footer equipped with a 6 h.p. double cylinder Ferro engine and a 26 footer with an 11 h.p. double-cyl. Ferro. The 16 and 18 ft. Mullins "Special" models are also exhibited equipped with 2 and 6 h.p. Ferro engines, both models containing all of the general features of distinction common to Mullins boats, and in a general way corresponding to the other models in construction and finish.

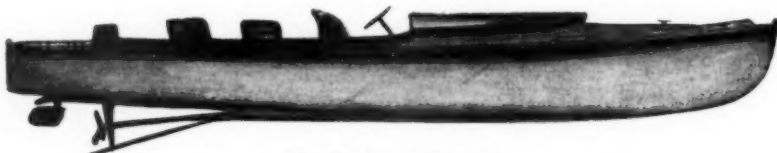
Reliance Motor Boat Co., 116 Broad St., New York City. This company will exhibit a 21-foot speed runabout equipped with a 20 h.p. engine and with a speed of 18 miles an hour. The feature of the exhibition, however, will be a new 23 foot runabout the construction of which is as follows: the keel is of the plank variety rabbeted to receive planking, the planking being of ¾ in. mahogany; the frames ¾ by ½ in., are of white oak spaced 6 in. centers. There are two longitudinal stringers on either side running from stem to stern. The frames are continuous from sheer to sheer, riveted through the keel except at the shaft log where they are strengthened by ½ in. oak floor timbers, notched over the shaft log. There are two water-tight bulkheads, one forward of the engine compartment, the other at the aft end of the stern seat. These besides serving the original purpose of water tight compartments, make for additional strength. The shaft log is of seamless copper tubing flanged on the outside of the hull, caulked and finished flush with the keel and on the inside flanged to extra thick white oak floor timber, which timber in turn is fastened through frames and stringers. On the bulkhead is mounted a



The Racine 18-foot speed-about



Toppan offshore cruiser



The Mullins auto boat



Detroit Boat Co.'s "Silver Fizz"



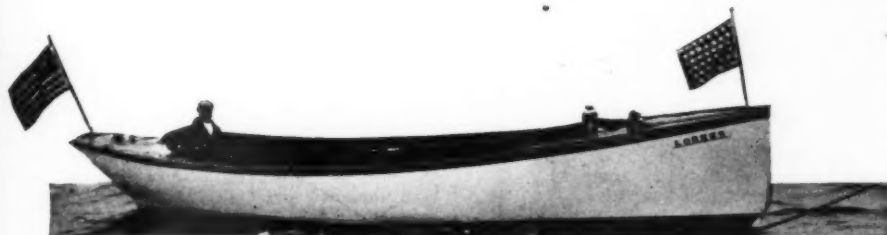
The Truscott gentleman's runabout



The Elco 40-foot raised deck cruiser



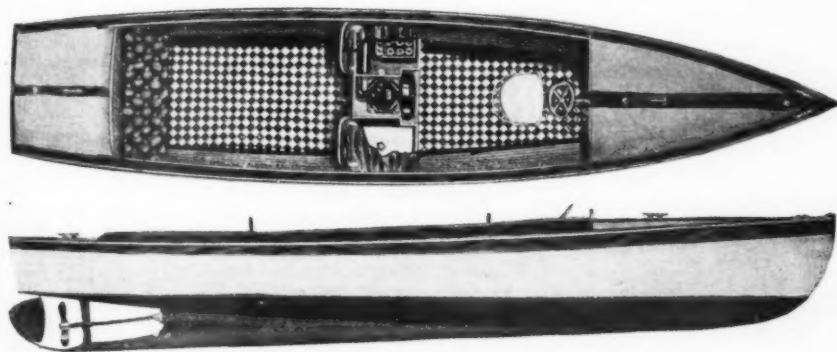
The 1911 Elco De Luxe.



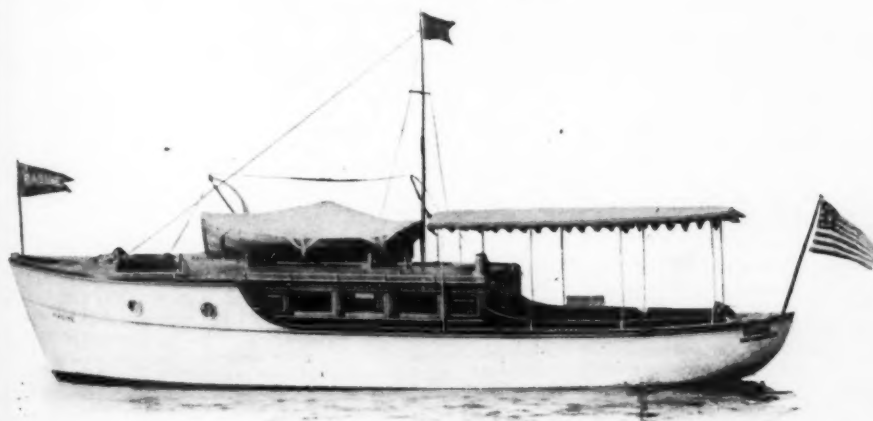
One of the Atlantic Co.'s Gurnet dories.



The Hanksraft 30-footer.



The Rice 20-foot special.



Racine 36-foot raised deck cruiser.

mahogany auto steering wheel within which are the spark and throttle controls. Also mounted on the bulkhead is a tachometer which registers the revolutions of the motor, electric patent switches for the sailing lights, which are electric, and the pump and pressure gauge, which is connected with the gasoline tank under the steersman's seat. Mounted at the left of the steering wheel is the clutch and reverse gear. The boat has a roomy cockpit with capacity for four wicker chairs giving a total capacity of eight persons. The motor equipment consists of a four-cylinder, four-cycle Continental motor, $4\frac{1}{2}$ bore by $4\frac{1}{2}$ stroke and developing from 24 to 28 h.p. The motor is equipped with Bosch dual ignition and with Reliance special rear starting device affording the means of starting the motor with a small starting crank of polished brass mounted on the bulkhead. The boat is equipped with a Klaxon horn located on the forward deck with electric switch on the bulkhead. These and many other features make a most luxuriously fitted boat, the total cost of which is \$2,000.

Gas Engine & Power Co. & Chas. L. Seabury & Co., Cons., Morris Heights, New York, will exhibit the following boats: a 45 ft. cruiser of the midship deck type with a four-cylinder Speedway gasoline engine, with bore and stroke of 6 in.; a 25 ft. gasoline yacht tender planked and finished in teak wood and equipped with a four-cylinder 4 in. bore by $4\frac{1}{2}$ in. stroke Speedway; a speed launch 39 ft. and 8 in. overall fitted with a 6 cylinder 8x8 in. bore and stroke, Speedway, the same type as in the well-known Tartar with a guaranteed speed of 34 miles an hour. This boat will be planked and finished in mahogany. A stock type of 30 ft. gasoline launch of the runabout class. In connection with these boats will be exhibited the usual assortment of Speedway engines of the latest design.

The Hanksraft Co., Chicago, Ill. This company will exhibit a perfect working model of their 30 footer built on a scale of 1 in. to the foot. This boat is complete in every detail and will be shown in operation in a tank of water. The appearance of this model is exceedingly attractive and the nature of the exhibit will doubtless cause a great deal of interest as well as giving a practical idea of the boat in operation that could not be had by a mere description. To complete the illusion of the boat moving through the water the company has arranged to have a miniature panorama at the back of the tank showing the passing country. The following are the general characteristics of the Hanksraft boat: the motor is placed under the forward deck and the mechanical construction of this arrangement may well be compared to the best automobile construction. The boat and motor are designed and built as a single unit, just as in a particular make of automobile the chassis is built especially for a certain motor and its transmission making a single unit of the whole. The accessibility of all the parts is an important feature and all parts such as plugs, coil, timer, carbureter, etc., are placed high up away from any possible dampness and within easy reach from the cockpit through the deck hatches. Another feature is that the motor may be started through the steering wheel the operation requiring but a slight push forward on the wheel and a turn to the right. The forward motion disconnects the wheel from the steering gear and connects it directly with the motor shaft through chain and sprocket. The moment the motor starts the wheel is automatically disengaged from it and is ready for steering. The steering wheel also contains the spark and throttle levers and the reverse lever stands to the left of the wheel.

The Detroit Boat Co., Detroit, Mich., will have on exhibition a representative line of their boats including semi-speed boats, runabouts, some special models and some automobile boats as well as several models having a compromise stern. Their model 1215 which is a combination of a family runabout and speed boat has the following specifications: Length over all 28 ft. and extreme beam, 4 ft. The planking is of $\frac{1}{2}$ in. finished cypress and the frame of $\frac{3}{4}$ by $\frac{3}{4}$ in. white oak, 6 in. centers. The decks and covering boards are finished in cherry with a mahogany transom. The interior is also finished in cherry while the coaming is of quartered oak. It

is marketed in two regular colors, black or blue and the regular equipment includes 12-14 h.p., two-cylinder, two-cycle, reversible Detroit engine and reverse gear, float feed automobile carburetor, auto commutator with automobile control steering wheel, upholstered seats, tank and outfit ready to run. This boat makes from 18 to 20 miles an hour and the price including the regular equipment is \$1,500.

The Rift Climbing Boat Co., Athens, Pa. Something entirely new will be seen in this exhibit. It is a tunnel stern, light draft, flat bottom motor boat especially designed for river and shore water navigation. It draws only five in. of water fully equipped and will run under full power anywhere a canoe or flat bottom row boat will float. The tunnel in this boat is a radical departure from the usual tunnel construction and is built on straight instead of curved lines and is such a height at the apex as to take in the entire diameter of the propeller allowing no part of the same to extend below the bottom of the boat. It will climb a rift having a fall from 18 to 24 inches in 300 to 400 feet without the slightest trouble. The length overall is 16 ft., beam is 4 ft., draft is 5 in., and the boat has a speed from 7 to 8 miles an hour, swinging a 10 in., three blade propeller. It has a seating capacity of from 6 to 8 persons.

The Toppan Motor Co., Boston, Mass., will show a 27x7 ft. offshore cruiser of the cutter design equipped with one of the latest type 8 h.p. Toppan reversible two-cylinder

Truscott Boat Mfg. Co., St. Joseph Mich. The Truscott people will exhibit a complete line of their boats including the following: a 22½ ft. family design known as the "Truscott Latest Production." In this boat the motor is concealed, the controls are of the auto type, seats are particularly comfortable and plenty of room is left for chairs. The planking is of cedar, double skin construction, copper fastened. The boat is finished in mahogany, beam 5 ft. 2 in. The motor is a two-cylinder, 10 h.p., with rear starter and reversing clutch, and gives a speed of 12 miles an hour. The 21 ft. family launch is also shown finished in quartered oak fully equipped for one man control. The 5 h.p. motor which gives her a speed of 8 miles an hour is partly concealed by a neat arrangement of seats. In addition to these two will be shown a 28 ft. gentleman's runabout and a 40 ft. day cruiser. The boat is powered with a 6-cyl., 35 h.p. motor placed beneath the bridge deck and sells for \$3,500.

The Luders Marine Construction Co., Port Chester, N. Y. This company will exhibit an extremely able-bodied fishing launch or family boat of a stock model, though it is rather more elaborate and substantial than the usual boat under that heading. These boats are powered with a 6 h.p. motor and make a speed of about 7 miles per hour. The hulls are very strongly constructed and are finished in quartered oak and mahogany. A bulkhead divides the passenger space proper from the engine compartment. The

engine. One point, however, in which the new engine differs from the Auto-marine is that the oil pan is extended back enclosing the clutch, thus keeping the oil and dirt away from the rest of the boat. It is also equipped with a Buffalo positive drive clutch with the added advantage of a new disengaging device which does away with the usual strenuous pulling when taking out the clutch. The "Six" is also equipped with a new type of rotary circulating pump. The other exhibits will include representative models of the regular, heavy duty, and high speed types.

B. F. Brown Gas Engine Co., Schenectady, N. Y. A list of motors which this company will exhibit at the New York Motor Boat Show will be as follows: a two-cylinder, 2 h.p., Brownie Canoe motor, a single cylinder 1 h.p., a 10-12 h.p. motor and a pair of right and left twin screw motors of 14-16 h.p.; these being mounted on a base with controls and oilers complete; a three-cylinder 30-40 h.p., with auxiliary intake and a double ignition system including the Delco system and the Bosch high tension magneto with aluminum base, designed and built for very high speed work, the motor turning an 18 inch diameter, 32 inch pitch, Columbia speed wheel at 1200 r.p.m. In addition to these will be shown a six-cylinder, 80 h.p. motor equipped with an aluminum base and three sets of ignition which consist of a Delco distributing system, the Bosch high tension magneto and the Bosch dual systems.

The Clifton Motor Works, Cincinnati, O. This company is going to exhibit a large three cylinder 75 h.p. engine with a bore of 8½ inches, stroke of 11 inches; a four cylinder 20 h.p. open base engine and a two cylinder 14 h.p. heavy duty engine. The leading features of the Clifton engine are as follows: great accessibility; the pistons may be removed through an opening in the housing without disconnecting a pipe or breaking a joint, perfect water circulation system and a thorough cooling of the exhaust; all pipes are attached by means of stud bolts instead of cap screws. The engines are of the closed head type, have facilities for removing sediment from water jacket; large inlet and exhaust valves and free unobstructed passages for flow of inlet and exhaust gas.

The Dean Mfg. Co., Newport, Ky. "Br'er Fox" will be on exhibition at the show. Those interested in motor boating will doubtless remember the remarkable run of the speedboat, "Br'er Fox II," owned by the Dean Mfg. Co., South Cincinnati, Newport, Ky. "Br'er Fox" in charge of Cap. Dean ran from Cincinnati to New Orleans, a distance of 1,554 miles at an average speed of 29.08 miles per hour. By special arrangement of Mr. Campbell, manager of the Show the hull of "Br'er Fox" has been forwarded, and a full account of the remarkable run will be distributed by application at Space 83, where also the exhibit of Fox Motors will be shown as follows: a single cylinder Fox medium duty or semi-speed motor with Fourth Port Accelerator; one each of the 3½ and 7 h.p. Special Motors, three-port; one of the single and double cylinder heavy duty motors, designed for the fishing trade and equipped with Perfect Waterproof ignition system, and one or more of the Fox De Luxe Motors for speed boats and aeroplanes, equipped with Fox Fourth Port Accelerator, and the Bosch high-tension Magneto system.

The Eagle Co., Newark, N. J. This company will exhibit a complete line of Eagle Marine engines in one, two, three and four cylinders, all embodying practically the same principles in construction. The four cylinder engine is a high speed engine, with a jump spark ignition and develops 25 h.p. at 700 r.p.m. It has a bore of 7½ inches, stroke of 5 inches with a 16 inch diameter fly wheel, a crank shaft 1½ inch in diameter and a piston pin 1¼ in. There are four piston rings, ¾ inch wide. The total weight of the engine is 710 pounds, and the weight with reverse gear is 870 pounds. With each engine the regular equipment consists of Lunkenheimer sight feed oil cups, compression grease cups, sparking devices, ball thrust collars, Thermex Silencer, speed controls for igniter and carburetor which is a Schebler, Hyde Windlass Co. manganese bronze propeller, bronze shaft, stuffing box and starting handle. On this engine the Perflex system of ignition is furnished



Flying-Fish, an aerial motor boat, built by the Michigan Steel Boat Co.

motor so placed that it is easy of access and can be started from the inside of the cabin. The motor is placed in the cockpit and so arranged that it can be adjusted with the operator at the steering wheel. The boat can be handled in all kinds of weather by one person, and besides being equipped with a toilet has many novel features for a cruising boat of this size, having a wonderful amount of space. Another production of this company is the new type 18 ft. safety launch with oak finish, brass deck fittings and an automobile top. One of their most popular designs is the 19 ft. smooth planked dory equipped with three h.p. Toppan motor together with their 22 ft. fishing dory with the engine housed making a desirable offshore cruising dory.

The Atlantic Company, Amesbury, Mass. This company's exhibit will comprise all their line of Gurnet Dories, 18½, 20½, 23½, 25½ and 30 foot boats, together with two semi-speed clipper launches 25½, 30½ feet respectively. Additionally will be featured the 16-foot dory skiff equipped with a 3 h.p. motor and listed at \$165. This boat has been one of their most popular models. All the boats exhibited will be equipped with the regular type of Atlantic two-cycle three port engines for the small boats and for the large ones the Atlantic Special, three port, two-cycle. Conforming with the usual practice the Atlantic Company has also built a high-speed runabout capable of a running speed of 25 miles per hour, equipped with a 40 h.p. engine. This boat will be handsomely finished in mahogany.

boats are twenty feet long with a beam of 3½ ft., and are intended to carry about six people, but have a capacity of from 10 to 12. This boat has been chosen by the Luders people to show the public the general style of their work, on which their reputation for their large cabin cruisers and fast cabin launches has been established.

Rice Brothers & Co., East Boothbay, Me. will exhibit parts of their 4 h.p. engine, together with one of their twenty-foot special launches. The following is a brief resume of the dimensions and construction of the launch. The length is 20 feet over all and the beam is 4 ft. and 3 in., the height at the bow is 2 ft. 4½ in., and the draught is 17 in. The entire weight of the launch is about 700 lbs. The stem keel and frames are of clear oak and the planking is of white pine or cedar, fastened to frames with brass wood screws. The top strake and stern are of oak and the coaming deck and battens are mahogany. The motor is a 4 h.p. Boothbay Special, two-cycle, with make-and-break ignition and the price complete is \$275 F. O. B. East Boothbay.

Buffalo Gasoline Motor Co., Buffalo, N. Y. The foremost feature of the Buffalo exhibit will be the new "Six." This is a light high speed engine designed to meet the demand for high speed engines on light boats. It has 4¼ in. bore, 5 in. stroke, and develops 40 h.p., at 800 revolutions per minute. The new engine closely resembles the 25 h.p. Auto-marine and all the important points of its construction have been tried out on that en-

with regular equipment with an option of the Orswell system and Connecticut timer. The price of this engine is \$450, and with the reverse gear attached \$78 extra.

Ferro Machine & Foundry Co., Cleveland, Ohio. This company's display will include a complete line of Ferro motors in all sizes from 3 to 25 h.p. jump spark ignition and 4 to 15 h.p. with make-and-break ignition. The two new features of principal importance in the 1911 models are the new "Ferro Carbureter Timer Control" and the application of a high tension magneto system to all of the two-cycle engines. The 1911 Ferro Motor embodies the above mentioned carbureter timer control in the following manner; the new carbureter is provided with an elbow containing a butterfly valve which is connected on the carbureter above the auxiliary air valve and automatically operated by a rod from the timer handle. By the operation of the butterfly valve just the right amount of air is allowed to enter the carbureter regardless of whether the motor is running fast or slow. The magneto equipment attached to the 1911 Ferros is that of the K-W Ignition Co., of Cleveland.

Fulton Engine Co., Fulton, N. Y., will exhibit several sizes of the Fulton together with various parts showing in detail the improvements for 1911. These improvements consist principally of a directly attached magneto and mechanical oiler. There will also be a detailed display of the improved jump spark ignition system whereby Witherbee Igniters are attached direct to the cylinders dispensing entirely with coil and batteries. The engines equipped with a make-and-break system have also been considerably improved, the new system providing for very flexible adjustment of the ignition together with improved style of spark plug. All of these features are more or less radical in their construction and according to the makers have proved very efficient during their period of testing them. In conjunction with the Fulton exhibit there will be displayed two models of the Kent engine.

Remington Oil Engine Co., Stamford, Conn. The Remington oil engine works on a principle thoroughly covered by patents. There is created in the cylinder such an atmospheric condition that the kerosene acts in it just as the gasoline acts in the normal atmosphere. Besides this, it is claimed, that the oil explosion produces a long continued shove instead of the hammer-like blow created on the top of the piston by the explosion in a gasoline engine. It is claimed that the Remington engines always start promptly and, regarding their reliability and amount of cleaning required, the company states that it has operated its factory and lighted it with Remington engines for the past three years and during that time the men have never lost any time. The cylinders of the engine have never been cleaned and the cost of repairs has been practically nothing.

The Loew Mfg. Co., Cleveland, O. This company will exhibit a representative display of the engines of their line. The general features of these engines are as follows: they are of the four-cycle type and ignition is by jump spark. On the one-two and three cylinder engines, when ignition system is furnished, are included timer, spark plug, cables, and a polished mahogany dash coil with switch and batteries for furnishing the currents. On both four- and six-cylinder engines are furnished complete two separate and distinct systems of ignition operating on two sets of spark plugs. One source of current is from a magneto of the high tension distributor type. The other system is through a high tension distributor and vibrating dash coil deriving its current from battery. The lubrication is accomplished by an automatic circulating pump splash system. All Loew Victors are equipped with Schebler carbureters.

The Lackawanna Mfg. Co., Newburgh, N. Y., will show their line of Lackawanna engines. The Lackawanna Anti-kranking device is a radical improvement in the two-cycle engine. This consists of an arrangement for obviating flooding or excess oils and the resultant cranking to get the too rich mixture out. By an ingenious attachment to the crank case with a convenient control directly opposite each, the over-rich mixture may be cleared instantly. Any one who has operated a marine engine can appreciate the value of

the new Lackawanna device in getting a stalled engine in motion immediately. It is remarkably simple. By a neat invention, the pump carrying on its shaft the driving gear below, and timer above is secured direct on a hollow column through which it discharges its flow of water. The water is thence delivered to the base of cylinder jacket at point of attached column. Concealed tortuous passages are entirely avoided, piping is unnecessary and the whole circulating system left fully exposed and independent of engine base in taking down or assembling.

Lamb Engine Company, New York City, will exhibit their medium duty, heavy duty, high speed and Fisherman's motor. Their medium duty motor is built in two cylinder 12 h.p., three-cylinder 18 h.p., four-cylinder 24 h.p., and 6 cylinder 40 h.p. These motors have a $5\frac{1}{4}$ bore by 6 inch stroke. Normal revolutions 400. Their high speed motor is built in four- and six-cylinders, 35-40 h.p., and 60-70 h.p., respectively. These motors are built very light, the crank case, intake and exhaust manifolds are of aluminum. The piston is light and perfectly balanced. This high speed type of motor has the valves in the top of the heads directly over the pistons. This company's Fisherman's motor is a two-cylinder machine having a 5 in. bore by $6\frac{1}{2}$ in. stroke. Normal revolutions 350, and rated at 8 h.p., cylinders are cast in pairs.

Jencick Motor Mfg. Co., Port Chester, N. Y., are now putting out their 1911 models. This particular motor is a six-cylinder, $7\frac{1}{2}$ in.

danger from kick backs, and makes starting crank unnecessary. A sectionalized model of both type "E" and type "G" will be shown in operation. Unassembled parts of both types will be exhibited showing the care used in manufacturing these engines. "E" and "G" types are of the two-cycle, three port construction and operate on gasoline, petrol, naphtha, and benzine.

Gasoline Engine Equipment Co., New York City. This company will have on exhibition in their space a Smalley four-cylinder, 40-50 h.p. aluminum engine and a 20-25 h.p. four-cylinder iron engine; an "Ideal" four-cylinder 40 h.p. engine; a Termaat & Monohan two-cylinder 18 h.p., single cylinder 5 h.p., a single cylinder three h.p., and an electric lighting outfit; and a Monarch two-cylinder 14 h.p. kerosene engine and a single cylinder 5 h.p. gasoline engine. The exhibit will be very complete and interesting.

Palmer Bros., Cos Cob, Conn., will exhibit a type R3, 15 h.p. three-cylinder, four-cycle motor type P3 15 h.p. three-cylinder, two-cycle and Type Q3 20 h.p. three-cylinder and the type Q2 six h.p. two-cycle, two-cylinder and a Type S1 $3\frac{1}{2}$ h.p. single cylinder. All the three cylinder models are 1911 engines. The commutator is of the roller type while the carbureter is optionally Schebler or Kingston. The exhaust pipe is water cooled and the intake pipe is of aluminum. Spark plugs are covered with Palmer moisture proof plug hoods. A Holtzer-Cabot magneto is furnished at an extra cost. As



The U. S. Government Life Saving Boat which will be on Exhibition, Equipped With One of the Holmes Motor Co.'s Engines.

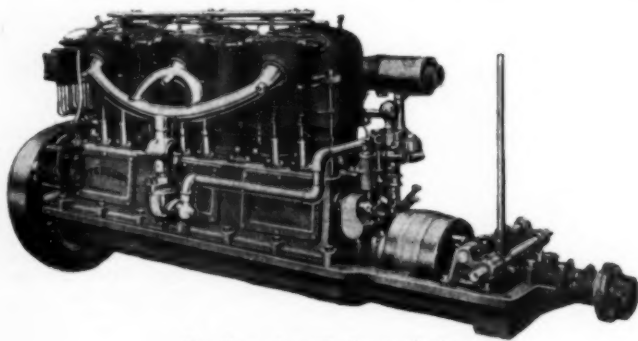
bore by $7\frac{1}{2}$ in. stroke, the company having sold a considerable number of the same type in four, six and eight-cylinder models, for high speed cruisers and express runabouts. In the building of these motors the materials used are as follows: for all steel parts, Krupp, chrome nickel steel, EF 60 grade, as is used for armor plate, and government nickel steel, are used. It is a known fact that the finest of machinery steel has a tensile strength between 60,000 and 80,000 lbs., per square inch, whereas this chrome nickel steel, after oil treating, to which process all parts are subjected, has a tensile strength of 225,000 lbs. per square inch, and the electricity and elongation properties are in the same proportion in comparison with the machinery steel. This insures strength and wearing quality as well, far superior to those of common steel. The cylinders and pistons are of semi-steel. The crank cases are of manganese bronze.

Fairbanks-Morse Co., Chicago, Ill., will have a large exhibit of their marine engines. Two sizes, $3\frac{1}{2}$ h.p. single cylinder and 7 h.p. double cylinder will be exhibited showing type "E," with solid head, split base, sight feed oiler, easy starting device and many other commendable features. They will also exhibit one each of their 6 h.p. single cylinder, 12 h.p. double cylinder, 18 h.p. three-cylinder, and 24 h.p. four-cylinder, Type "G" engines. This model has removable head, making working parts easily accessible, pressure oiling system, "auto control," efficient and positive cooling system, plunger or rotary pump, jump spark or make-and-break ignition, and easy starting device which eliminates

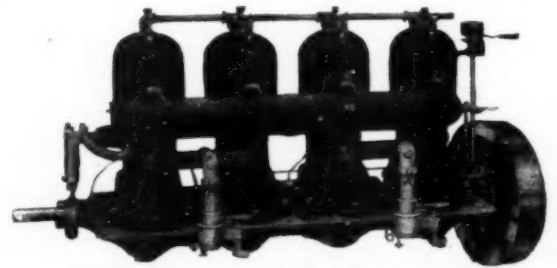
to bore and stroke all "P" motors whether one, two or three cylinder are $4\frac{1}{2} \times 4\frac{1}{2}$ inch bore and stroke. All "O" motors whether one, two or three-cylinders are 5×6 inches bore and stroke. All motors are of the three port type.

Bridgeport Motor Co., Inc., Bridgeport, Conn., will display representative models of their line of marine engines of which the following are the principle characteristics: These motors are of the two-cycle, three port type, and all parts are interchangeable and so arranged that they may be removed without taking the motor apart. Cylinders are water-jacketed, as is the cylinder head, the latter being detachable. The explosion chamber is counter-bored to slightly larger diameter than the cylinder, enabling a quick removal of the piston in case of emergency without first requiring a thorough cleaning of the chamber to permit the passage of the piston. The cylinders are provided with very large hand hole plates which provide immediate access to the base of the motor and permit adjustment of the connecting rod bearing or the removal of same together with the piston and connecting rod, without completely taking the motor apart. The ignition on all of these motors, except three, is of the make-and-break type. These motors are reversible on the spark.

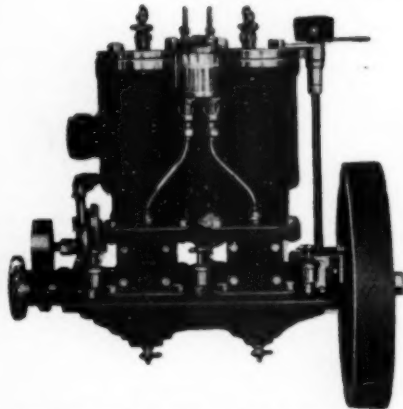
Emerson Engine Co., Alexandria, Va., will exhibit one of their 50 h.p. open rod framed cruising engines and one of their six-cylinder special racing engines which will constitute part of the power plant of two of the International Cup Defenders. These



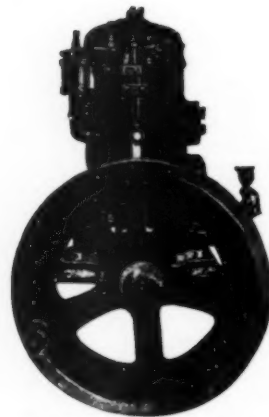
Sterling six cylinder 45-65 h.p.



The Dean Mfg. Co.'s four cylinder "Fox."



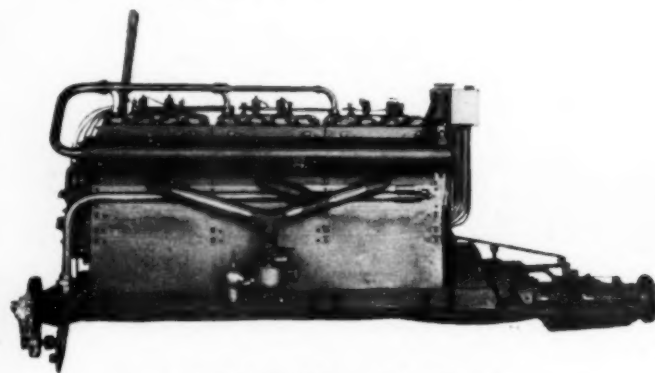
The Brownie canoe motor of the B. F. Brown Co.



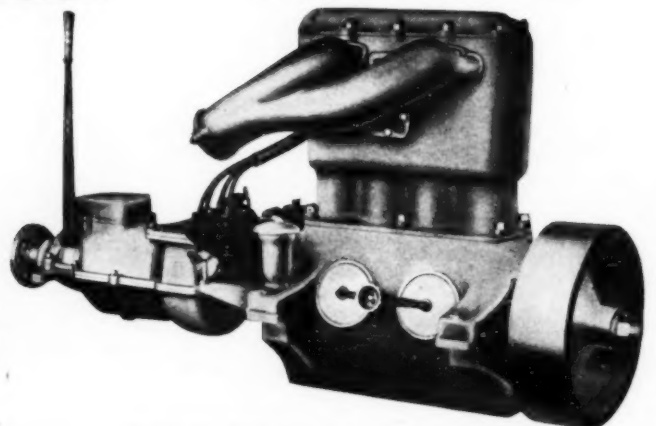
The Torrey fishing engine.



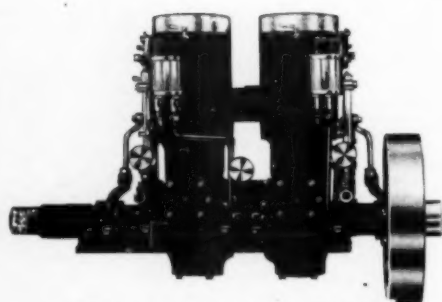
The Eagle three cylinder model.



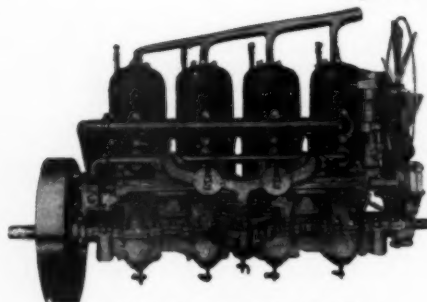
The Holmes Motor Co.'s 90 h.p.



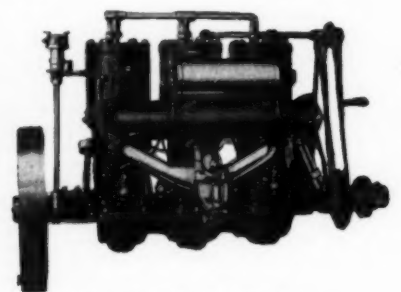
Reynolds four cylinder rotary valve engine.



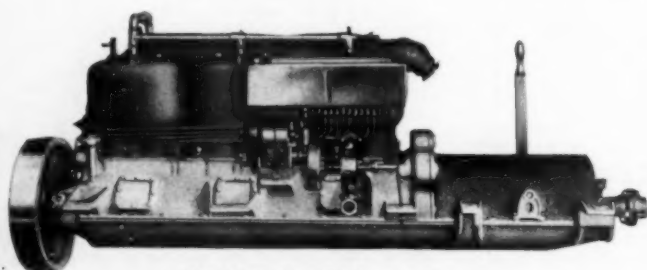
Mianus 15 h. p. double cylinder.



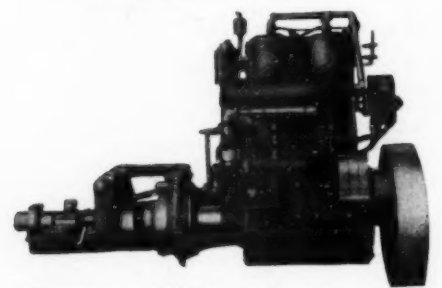
Tuttle light four cylinder model.



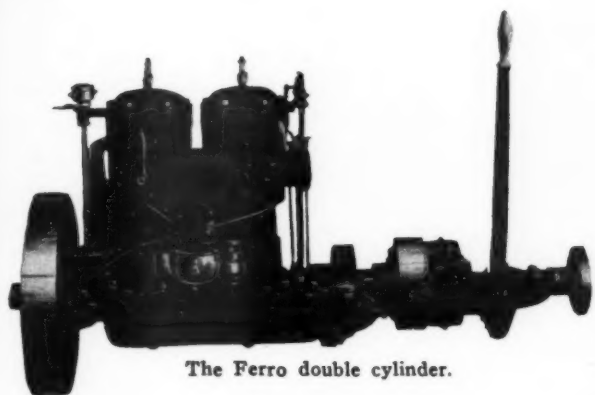
Bridgeport three cylinder.



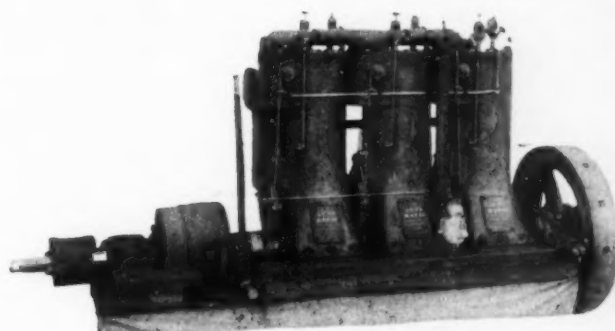
New Buffalo "Six" 40 h. p.



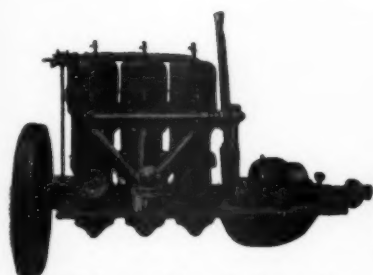
Doman two cylinder, with reverse gear.



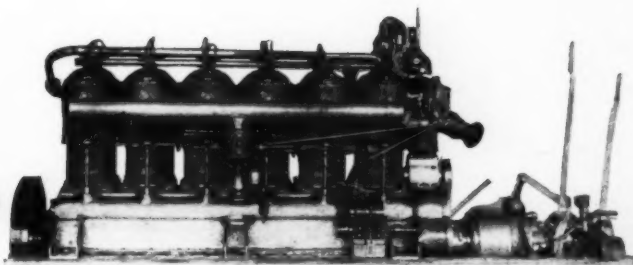
The Ferro double cylinder.



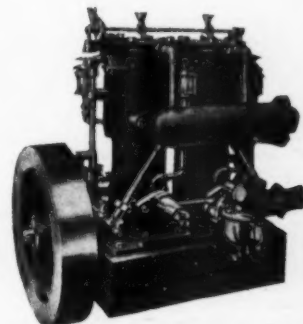
The Automatic 75 h. p. heavy duty engine.



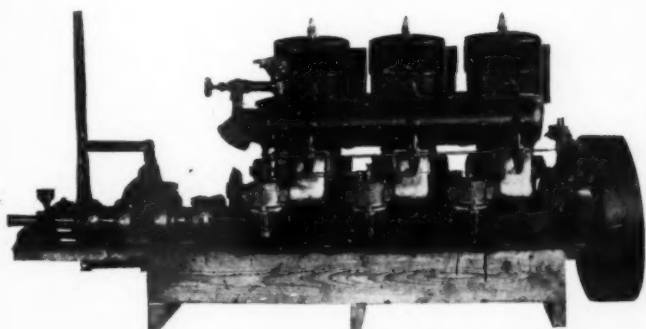
The Palmer triple cylinder, 15 h.p.



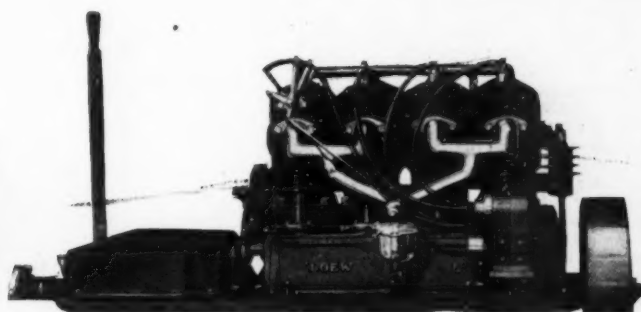
Jencick six cylinder 1911 model.



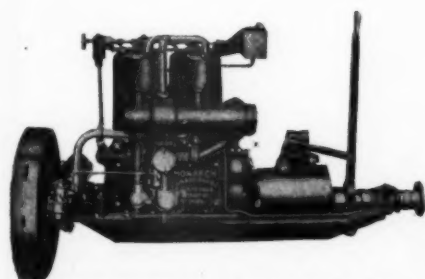
The Royal two cylinder model.



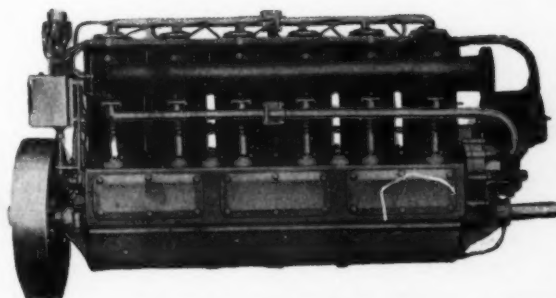
The Gray Model T. 36 h. p., triple cylinders.



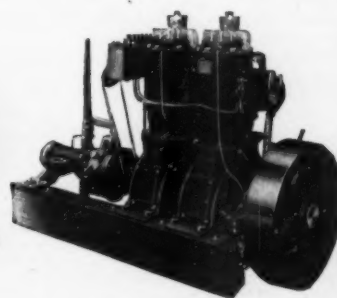
The Loew Victor four cylinder engine.



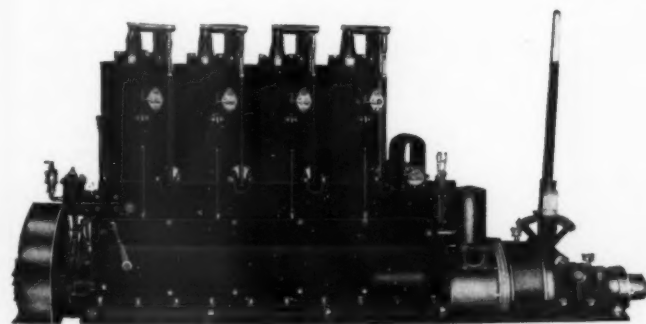
Grand Rapids Gas Engine & Yacht Co.'s Monarch kerosene engine.



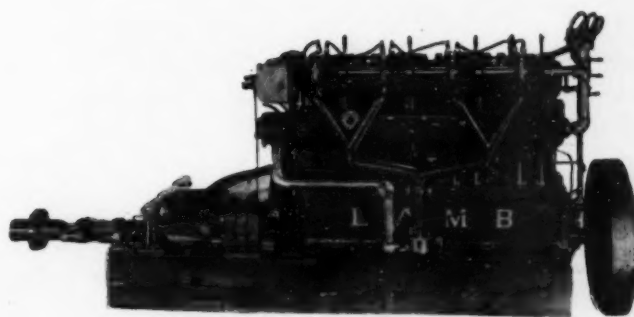
Van Blerck six cylinder motor.



Remington two cylinder kerosene engine.



The S. M. Jones Co.'s Ralaco four cylinder 45 h. p.



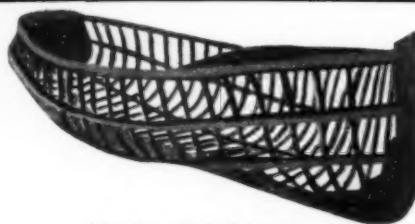
The Lamb four cylinder 24 h.p.

engines ready for installation will weigh about 300 lbs., and they will develop from 100 to 125 h.p. In addition to the above will be shown a double cylinder four port 20 h.p. and the "dinghy motor" of 10 h.p. The Emerson Company by demonstration and thorough explanation will endeavor to show the superiority of their motors, and the cup defender motors will undoubtedly cause a great deal of interest.

Anderson Engine Co., Shelbyville, Ill. This company will have on display a 4 h.p. single cylinder engine with a bore of $4\frac{1}{2}$ in. and a stroke of 5 in., weighing 275 lbs. It is of the four-cycle type. This engine is arranged with the intake valve in front of the cylinder and exhaust in the rear. The intake valve is operated automatically. A splash oiling system is used and the cylinder is supplied with an additional sight feed oiler. The ignition is of the jump spark type. Besides this there will be a 12 h.p. two-cylinder engine with a bore of 5 in. and stroke of 6 in., of the four-cycle type, and weighing 650 lbs. The intake and exhaust valves are cast integrally with the cylinders and arranged on opposite sides. Both are operated mechanically. The lubricator is a sight feed McCanna mechanical force feeding with leads to the connecting rods, main bearings and cylinders. The equipment includes, jump spark type ignition, Schebler carbureter, circulating plunger pump with brass circulating pipe and fittings. In addition to these two, will be shown a 24 h.p. four-cylinder weighing 1,200 lbs. and agreeing in every other respect with the two-cylinder engine described above.

The Hall Gas Engine Co., Philadelphia, Pa., will exhibit the type of engine used in the well-known cruisers Ilys and Caliph, which competed in the Havana race. The men in charge of the booth will be Peter Hall, John Sillen, their New York representatives, and Theo. Press. These men have all been in the Bermuda and Havana races as engineers and it is the company's intention to have them interest visitors at the show by recounting interesting experiences of deep sea racing from the engine room standpoint. This company has made a specialty of engines designed to run under all conditions and they claim the record for number of revolutions and hours run without a stop with full power on the engine. Of the five starters in the Havana race they won four cups out of five and at times they tell us the water poured into the engine room of the Caliph running all over the engine. The experience gained in these races has been embodied in a new engine which they hope to have completed in time for the show.

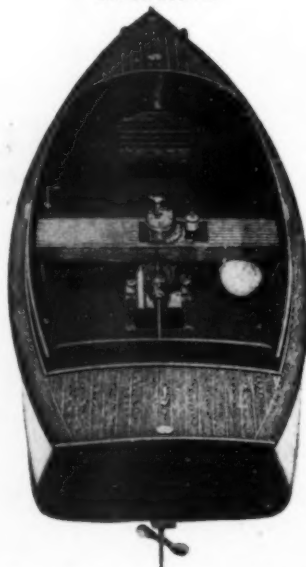
The Vanguard Engine Co., Boston, Mass. This company will exhibit three engines of different sizes together with a telescopic universal joint which they say is one of the most perfect working shaft couplings ever devised. Following are some of the claims made for the Vanguard engine: that by their method the charging of primary compression chamber of the cylinder is thoroughly mixed, vaporized and heated, which means that every particle of fuel should be consumed so that nothing remains to be scavenged, and this they claim is proven by the absence of odor from the exhaust pipe. Unlike other methods, the Vanguard is water jacketed half-way down the cylinder. The inner wall extends to within a half an inch of, and is open at the bottom and



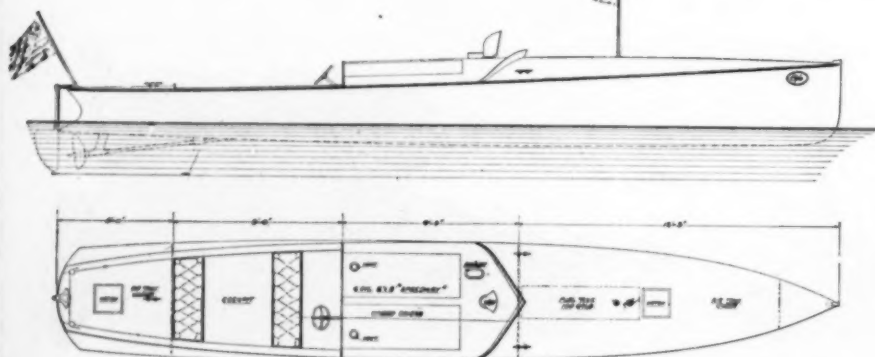
Monitor K-D boat frame.



The Rift Climbing boat, showing tunnel construction.



One of the Cleveland runabouts.



The Gas Engine & Power Co.'s 25-footer.

all the way around, thus creating a space between the walls of the cylinder for heating, and vaporizing the charge more perfectly. By this construction the same primary compression is maintained in all sizes, about ten pounds, whether it is a five or a fifty horsepower.

Standard Motor Construction Co., Jersey City, N. J., will exhibit a 40 ft. cruiser fully equipped. This complete boat and outfit is a fine example of the wholesome cruising type. Her power plant is a 16-20 h.p. Standard engine, an engine specially designed to give the highest possible propulsive efficiency in hulls of this type of construction. It is a four-cylinder 5 in. bore and $6\frac{1}{2}$ in. stroke machine, weighing only 1600 lbs. The propeller is of 26 in. diameter by 36 in. pitch, which is swung at a normal rotative speed of 400 r.p.m. This same engine in two cylinders of 5 in. by $6\frac{1}{2}$ in. instead of four is also exhibited. This machine, which weighs only 850 lbs. gives the same high propulsive efficiency to the same type of boat of from 25 ft. to 35 ft. in length. The propeller swung at 400 r.p.m., has a diameter of 24 in., and pitch of 30 in. The 25-32 h.p. four-cylinder 6 in. bore and 8 in. stroke engine, which is exhibited, is designed for the fuller bodied, heavier boat of from 50 ft. to 60 ft. in length. This power plant weighs 2,800 lbs. and swings a 32 in. diameter by 40 in. pitch, propeller at 350 r.p.m. It is a very efficient plant in the small tow or passenger boat. In boats of from 50 ft. to 65 ft. where considerable speed is desired the 40-50 h.p. is best adapted. This engine which is also displayed is the same as the 25-32 h.p., excepting that the 40-50 has six cylinders. The well-known Standard air starting and reversing type of engine is represented by the 100 h.p. six-cylinder $8\frac{1}{2}$ by 11 in. Its stanchion base providing lightness, accessibility and great rigidity, its very simple design, its compactness and perfect balance with its great power make it the ideal auxiliary power plant for the large sailing yacht over 100 ft. in length. This engine swinging a 38 in. by 60 in. wheel at 350 r.p.m. drives the 90 to 120 foot ocean going cruiser at a good speed through any sea. The engine equipped with a larger wheel turning at a lower rotative speed gives the heavy tug and freight boat of from 75 to 100 ft. a propulsive force amply sufficient for this service. This, together with a high speed auto marine engine will complete the exhibit.

The S. M. Jones Co., Toledo, O., will show the following Ralaco four-cycle engines: one two-cylinder 8-10 h.p.; one four-cylinder 15-20 h.p.; equipped with Bosch magneto, and one four-cylinder 45-50 h.p. engine, equipped with Bosch magneto. Following are the general characteristics of the Ralaco engines; the valve action is accomplished with one roller and one push rod making a valve containing no more parts than the suction valve, but retaining all the advantages of the mechanically operated type. All valves are arranged vertically and directly over the piston. Separate inlet and exhaust and water manifold piping have been eliminated by passages in the upper part of the housing. The exhaust inlet and water pipes are carried down within the cylinder water jackets, connected with the passages in the housing at the point where the cylinders bolt to same. The carburetor is of the float feed, self compensating type, placed at the after end of the engine and is supplied with warm air from the heater, through which the exhaust passes. All sizes except the 10 and the 15 h.p. are provided with an efficient governor to prevent racing when the load is thrown off. The governor is connected with a balanced throttle valve placed between the carburetor and the cylinders. The regular ignition equipment is of the jump spark type. The lubrication is splash system.

Van Blerck Motor Co., Detroit, Mich., will exhibit five motors of the following dimensions: one model B, 5x6, 2 cylinder, one model C, 5x6, 4 cylinder, one model D, 5x6, six-cylinder; one model E, $5\frac{1}{2}$ x6, four-cylinder; one model F, $5\frac{1}{2}$ x6, six-cylinder. All of these motors are of the four-cycle type. The exhibit will be in charge of the New York headquarters, at 133 Liberty Street.

Automatic Machine Co., Bridgeport, Conn., will display the following sizes of their automatic engine: 6, 12, 18, 25, 37 $\frac{1}{2}$, 50 and 75 h.p. This company have designed these

motors to fulfill the demand for a motor that is simple in design, strong in construction, durable and efficient in producing its called-for rating. The automatic motors according to their makers possess all these qualities and feature the following characteristics: independent cylinders and all working parts exposed, their own reverse gear on the same base with the engine, the facility with which the intake and exhaust valves may be removed and the exceptionally large valve area.

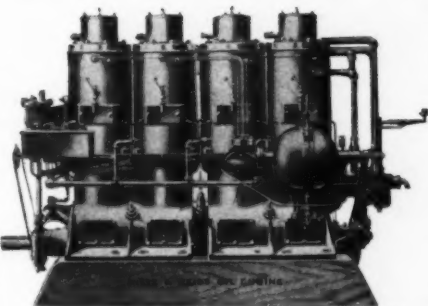
Holmes Motor Co., West Mystic, Conn., will show a full line of what they call their get-able type of motor in sizes from 20 to 90 h.p. Their exhibition will be next to that of the U. S. Government who are showing this year one of the Government life boats fully equipped in every way. All of these life boats are equipped with Holmes motors similar to the one reproduced in these pages. The general characteristics of the Holmes motor are: the method of construction with the cylinders mounted on A frames, which is radically different from any other type and permits of getting at all parts of the engine from above the line of the crank shaft. The water jackets around the cylinders are very accessible through removable plates. The bearings on these motors are exceptionally long. An automatic positive lubrication system is another feature, and the fly wheel is placed at the after end contrary to common practice so that the torque or twist of the propeller shaft is not obliged to pass through the entire machine and be absorbed by the fly wheel at the front end.

The Sterling Engine Co., Buffalo, N. Y. This company will exhibit a representative line of their engines in several size and styles, one of which is shown here, namely the model D, six cylinder four-cycle, 60 h.p. heavy duty type. The engine has a bore of 6½ inches and a stroke of 8 inches. Regular equipment includes the company's own especially built reverse gear contained in an extension base with ball thrust bearings, plunger water circulating pump, balanced valve type, governor throttle and mechanical force feed oiler. These engines are regularly equipped with the Bosch magnetic make-and-break system of ignition in addition to the regular jump spark system and are also equipped with a bilge and air pump. The rest of the equipment includes everything necessary for the installation of the engine, even including a gallon of lubricating oil and a gallon of paint for touching up the engine.

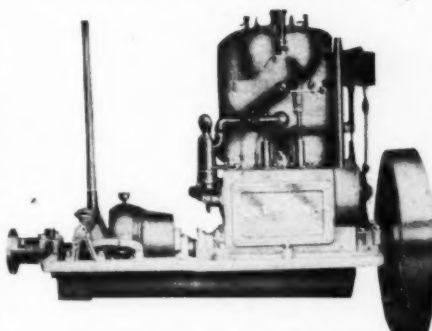
The Vim Motor Mfg. Co., Sandusky, O., will exhibit a full line of their well-known Vim motors which are made in 19 sizes including heavy duty, medium speed and high speed racing engines. The heavy duty Vim line consists of four sizes: 3½, 6, 12 and 18 h.p., rated at 400 to 450 r.p.m. Medium speed sizes, 3, 5, 6, 10, 15, 18, 20, 27 and 36 h.p., from one to four cylinders rated at 600 to 900 r.p.m. The extreme high speed sizes are 15, 23, 31, 40 and 55 h.p., in two, three and four cylinders rated at 900 to 1200 r.p.m. The carburetor on these engines has an attachment which may be adjusted with the throttle so as to give the correct amount of gasoline for all speeds; permitting a very great low and high speed range and is a part of the regular equipment. The company has also conducted exhaustive tests with various high-speed ignition devices and are prepared to furnish either the Atwater-Kent unispark or the Delco Distributor system, which they say they have found to be the best. They have also arranged to attach the Bosch high tension magnetos for regular and dual systems.

The Wolverine Motor Works, Bridgeport, Conn., will display the following engines all of the four-cycle type: three triple cylinder engines at 18, 36 and 50 h.p.; a 12 h.p. double cylinder, and a 5 h.p. single cylinder. Together with these engines will be shown a number of propeller wheels for the various engines and accessories for the same. The engines will be mounted on demonstrating stands and a thorough and complete explanation of the points and construction of the motors will be given.

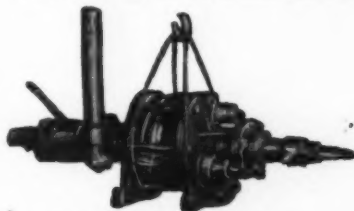
The Reynolds Motor Company, Detroit, Mich. This company will exhibit the Reynolds Rotary Valve Motor. The four-cylinders of the 3½x4½, 15-20 h.p. model are cast en bloc, not only insuring a very compact motor, but permitting the use of a very short, stiff two-



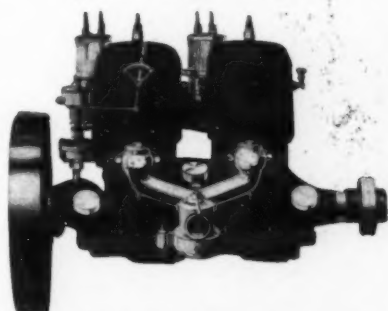
Mietz & Wiess four cylinder oil engine.



The Sterling two cylinder model.



The new Tygard engine.



The Gray double cylinder, 12 h.p.

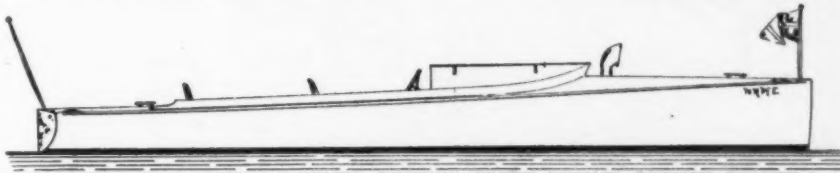
bearing crank shaft. Crank shafts and connecting rods are made from a special grade of drop forgings. Babbet lined bronze bushings, further insuring the utmost stability in the bearings, have been adopted in spite of their high cost. Crank case, reverse gear case and cylinder head cover are in aluminum, with thick substantial walls. Ignition is by dual system, with battery and coil to start on, and Eisemann high tension magneto running. The motor is operated by series of four disc valves each having a single port and a stem projecting upward through the casting into the upper gear case. The valves are seated in the heads of the cylinders, and as they rotate their ports register alternately with intake and exhaust passages in the cylinder casting.

The Royal Engine Company, Bridgeport, Conn., will exhibit a representative line of their Royal engines. These engines are of the two-cycle class in single and double cylinder designed for speed, power and commercial boats. The line comprises engines built in 2½, 5 and 7 h.p., single cylinder and 5, 10 and 15 h.p. in the double cylinder. In the two cylinder engines the carburetor is connected to a manifold attached directly to the base of the engine. The check valves in this manifold are so arranged that by simply tightening a nut either cylinder may be disengaged, the engine operating by the use of one cylinder. The company recommends the low tension make-and-break system for use on its engines for the reason that it is less complicated.

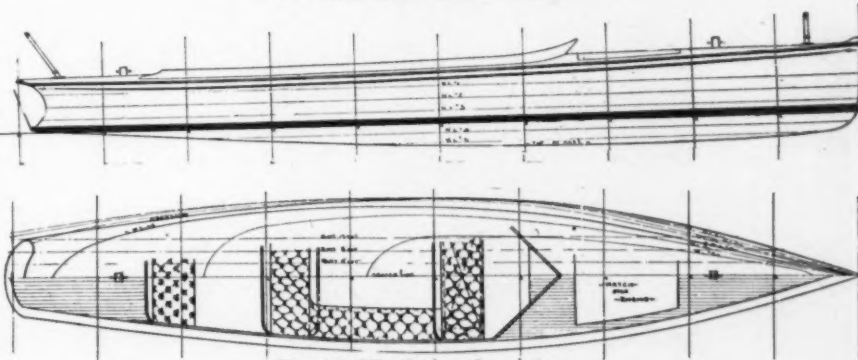
Torrey Roller Bushing Works, Bath, Me. This company will exhibit the Kennebec engine. This engine has been designed to be sturdy enough for the fisherman who goes out in any and all kinds of weather at any time. These motors are built in several sizes and are said to be capable of withstanding exceedingly rough usage. Several sizes will be shown and a thorough demonstration and explanation will be given.

Gray Motor Company Detroit, Mich. This company will exhibit their Model R in 3, 5 and 6 h.p. single cylinder and 10 and 12 h.p. double cylinders. The 1911 Gray Model R is exactly the same engine as the Model R of 1910 excepting that there have been slight refinements in detail wherever possible. Model R has been and still is the most popular engine the Gray Motor Co. ever put on the market, on account of its simplicity and durability, and has always been noted for developing power in excess of the listed rating. This model is equipped with a Krice Carburetor and a gravity feed oiler. In the Model T line there will be shown 7, 8 and 12 h.p. single cylinder, 14 and 24 h.p. in double cylinder, and 21 and 36 h.p. models in triple cylinder. All the Model T engines have removable cylinder heads covered with a steel enameled cap.

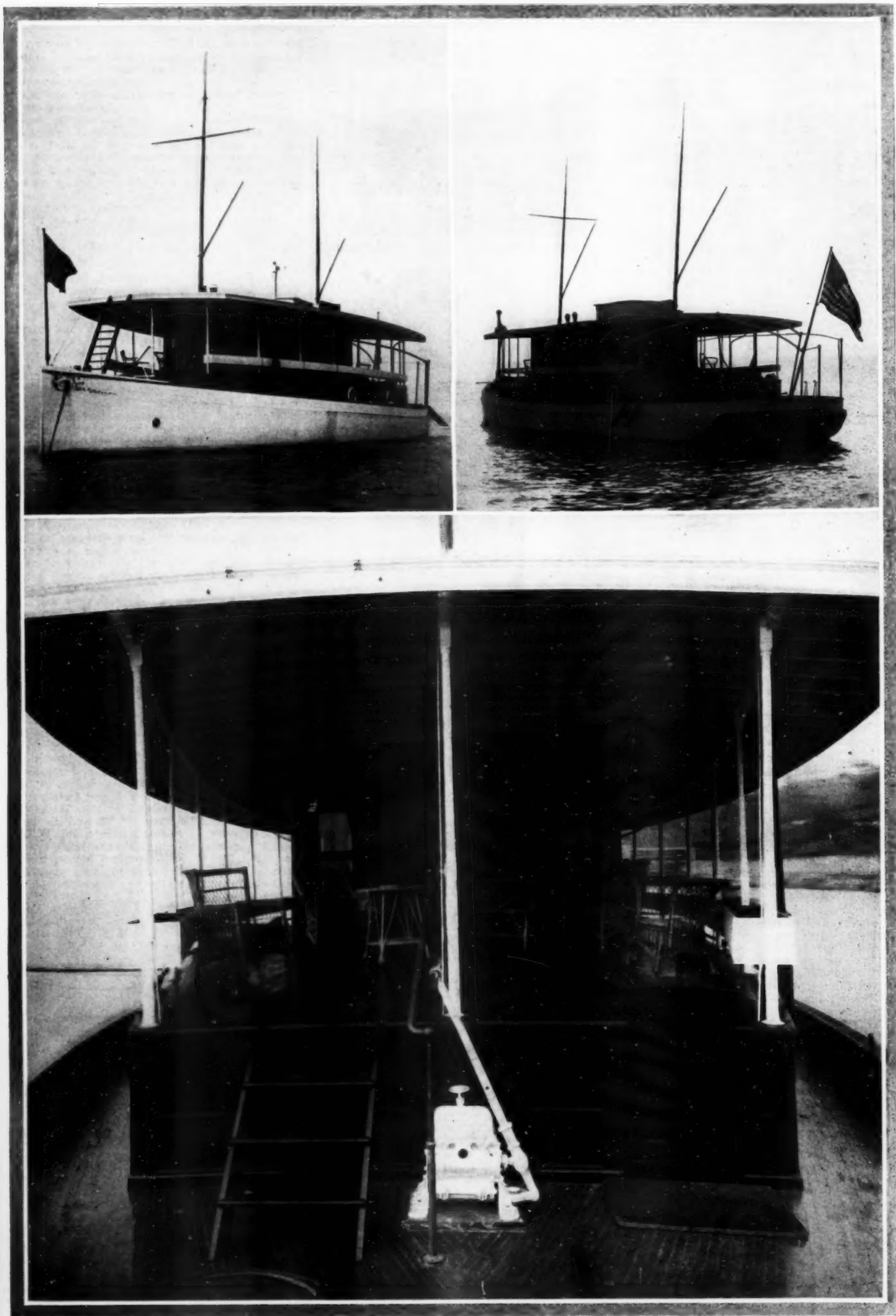
(Continued on page 50.)



The Reliance speed runabout.



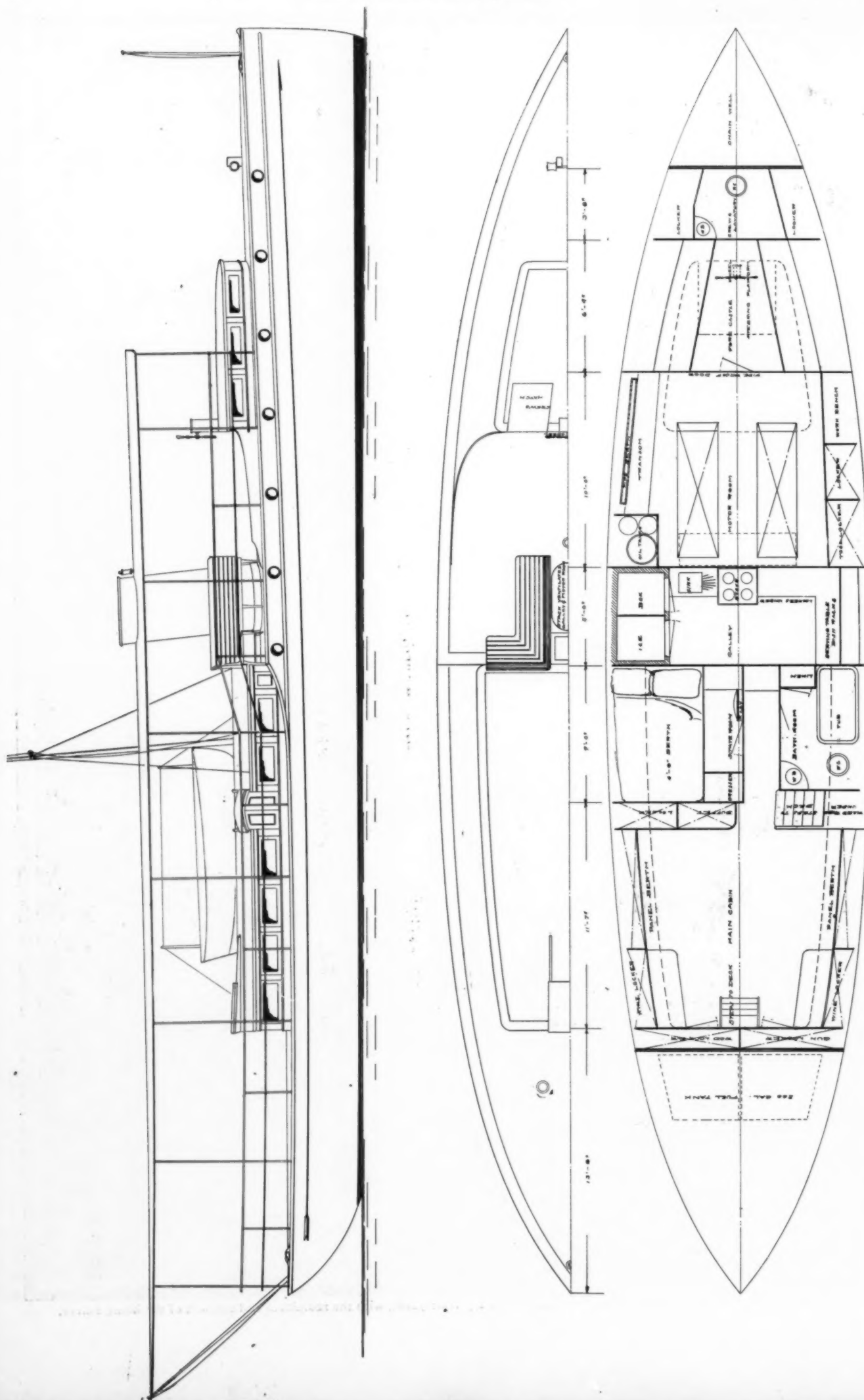
Harold W. Browne's 22-footer.



A well-known houseboat that illustrates the great possibilities of this type of craft as a summer home.



In the houseboat are combined many of the advantages of the private yacht, with the roominess and comfort of the home ashore.



A 65-footer under construction at the yard of the Matthews Boat Co., Port Clinton, Ohio. Note the ample bridge deck and its interesting seating arrangement.

New Motor Boat Designs.

An Interesting 65-Footer.

THE 65-footer shown on the opposite page was recently designed and is now under construction at the yard of the Matthews Boat Company, at Port Clinton, Ohio. She is of the bridge deck type with cabin trunks fore and aft, and ample deck space.

The keel is of white oak and the frames are of the same material steam bent and double spaced beneath the bulkhead and power plant. The stringers and clamps are of Oregon fir and yellow pine, the sheer strake is of white oak and the planking is of cedar above the water line and long-leaf yellow pine below. The fastenings throughout are of copper. The arrangement below decks provides for the fore-castle forward containing an auxiliary steering equipment besides accommodations for several men. The motor room, next aft, occupies part of the space beneath the forward trunk and bridge deck, and contains a pipe berth, transom, lockers, etc., besides the two motors. The galley and serving room extends the full width of the boat next aft and is connected by a passage to the main cabin. To port of this

passage is a stateroom, and to starboard a bathroom. The main cabin occupies the remainder of the space beneath the trunk and is provided with extension transoms along either side besides gun locker, buffet, wine lockers, etc. The gasoline tank is installed beneath the flush deck aft.

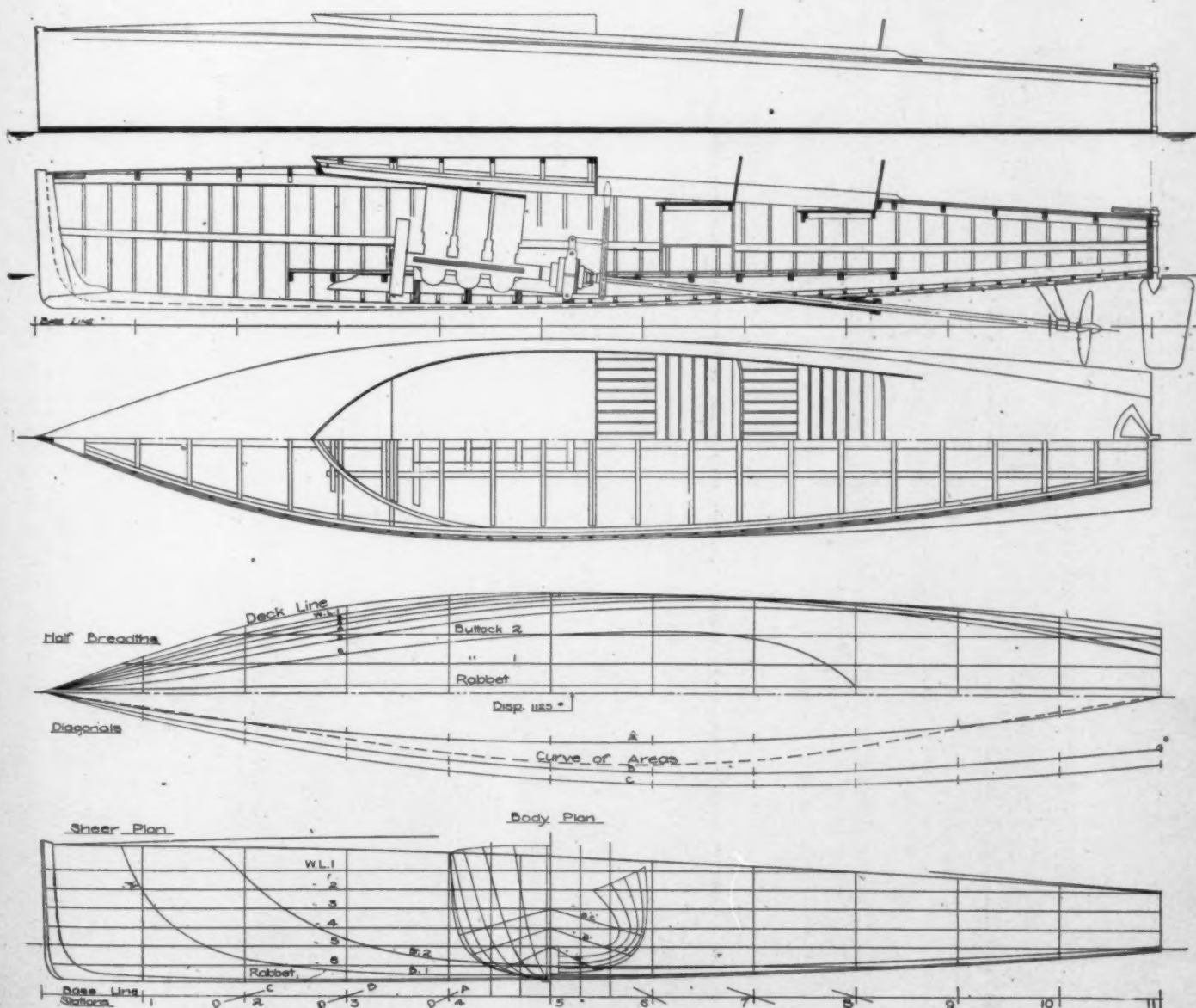
The bridge deck is large and extends around on either side of the stack and there is an unobstructed passage from it, on either side, to the after deck. The fore and aft seats on either side of the stack are an interesting and creditable feature. A continuous awning will extend from a point forward of the bridge deck to the stern; a signal mast will be stepped amidships and a tender will be carried on the trunk cabin roof.

A Fast 22-Foot Runabout.

BELOW is shown the design of a fast 22-foot runabout by J. F. Walker, of Austin, Texas. She will be provided with a 25 h.p., two-cycle, high speed motor, with which a speed of 18 miles per hour is expected.

The keel, frames and engine timbers are to be of white oak, the frames to be of one length from clamp to clamp, and to be $\frac{1}{2}$ in. by $\frac{3}{8}$ in., spaced six inches between centers. The planking is to be of white pine of a finished thickness of $\frac{1}{2}$ in. and is to be fastened with copper rivets. The floor timbers will be of long-leaf yellow pine, $\frac{3}{16}$ in. by $1\frac{1}{4}$ in., and are to be let into the engine bearers, to which they will be fastened with $\frac{1}{4}$ in. copper rods, headed over clinch rings. The flooring will be of $\frac{1}{2}$ in. by 2 in. yellow pine with $\frac{1}{2}$ in. spaces between. The deck will be $\frac{1}{4}$ in. in thickness and will be covered with 8 oz. canvas laid in lead. The removable hatch over the engine will be either of $\frac{1}{4}$ in. wood or of galvanized iron over $\frac{3}{4}$ in. by $\frac{3}{8}$ in. steam bent carlines.

The model is an extremely trim one with plumb stem and transom, slightly hogged sheer and moderately crowned deck. The motor is installed just forward of amidships and the cockpit is kept only large enough for two cross seats, allowing a considerable deck space aft, which aids materially to the appearance of the boat. The transom is square and there is a tumble home to the after sides.



The 22-foot runabout designed by J. F. Walker, of Austin, Texas., will be equipped with a 25 h.p. motor and is expected to do 18 miles per hour.

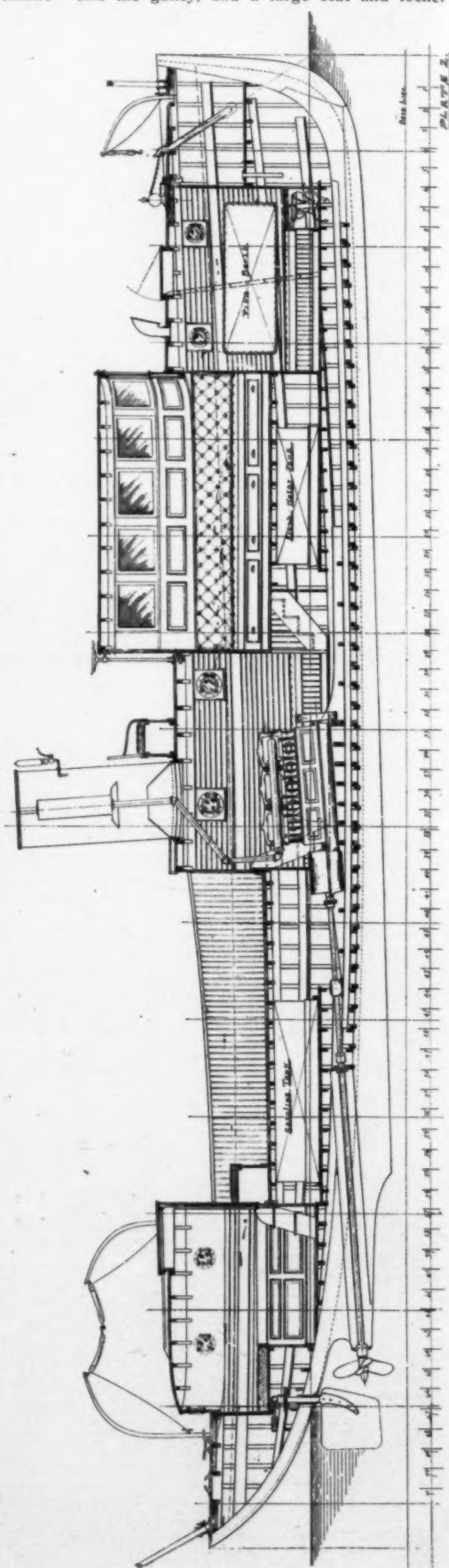
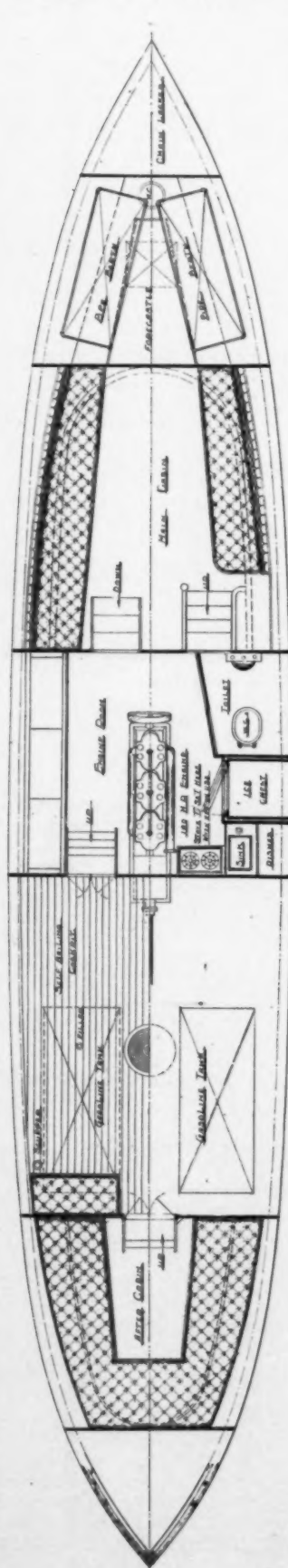
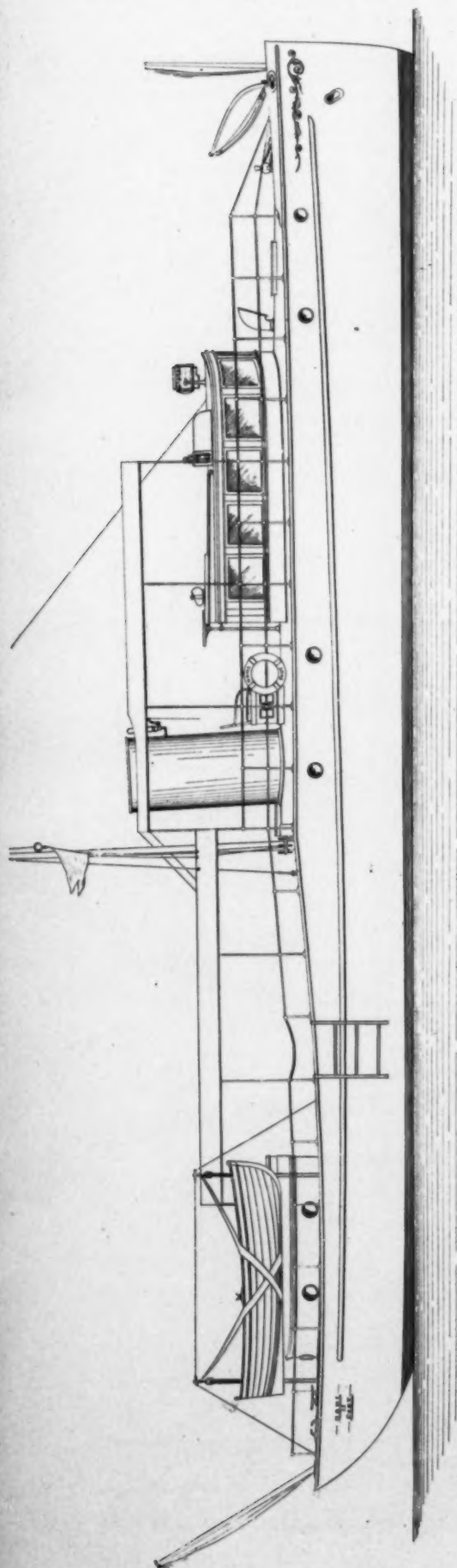
ON this page appears a new design from the board of W. E. Anderson, of Albuquerque, New Mexico. The boat will be used for ferry service between the business and the country residence of the owner, a distance of 12 miles, making three trips daily, and she is somewhat of a departure from the usual day cruiser or ferry launch. The main fea-

Novel 62-Ft. Day Cruiser.

ture is the large, roomy cockpit, just abaft amidships, which will be used exclusively except in bad weather when shelter may be had in the main cabin forward and the trunk cabin aft.

Below the forward deck is the forecastle

with accommodation for two men, and just abaft this is the main cabin with drop sash windows. This compartment may be entered directly from the bridge deck and there is a passageway leading from it down to the engine room, just aft of it amidships. This engine room contains an enclosed toilet room and the galley, and a large seat and locker



The 62-foot bridge deck cruiser designed by W. E. Anderson, of Albuquerque, will be used principally for day service between the city and the country residence of the owner.

along the port side. The motor is of 100 h.p., and with it a speed of 14 miles per hour is expected. The bridge deck occupies the deck above this compartment and a large stack provides ample ventilation. The large cockpit is next aft and beneath it are installed the two gasoline tanks. The after cabin occupies the space beneath the trunk and is provided with transoms which may be used as berths if desired.

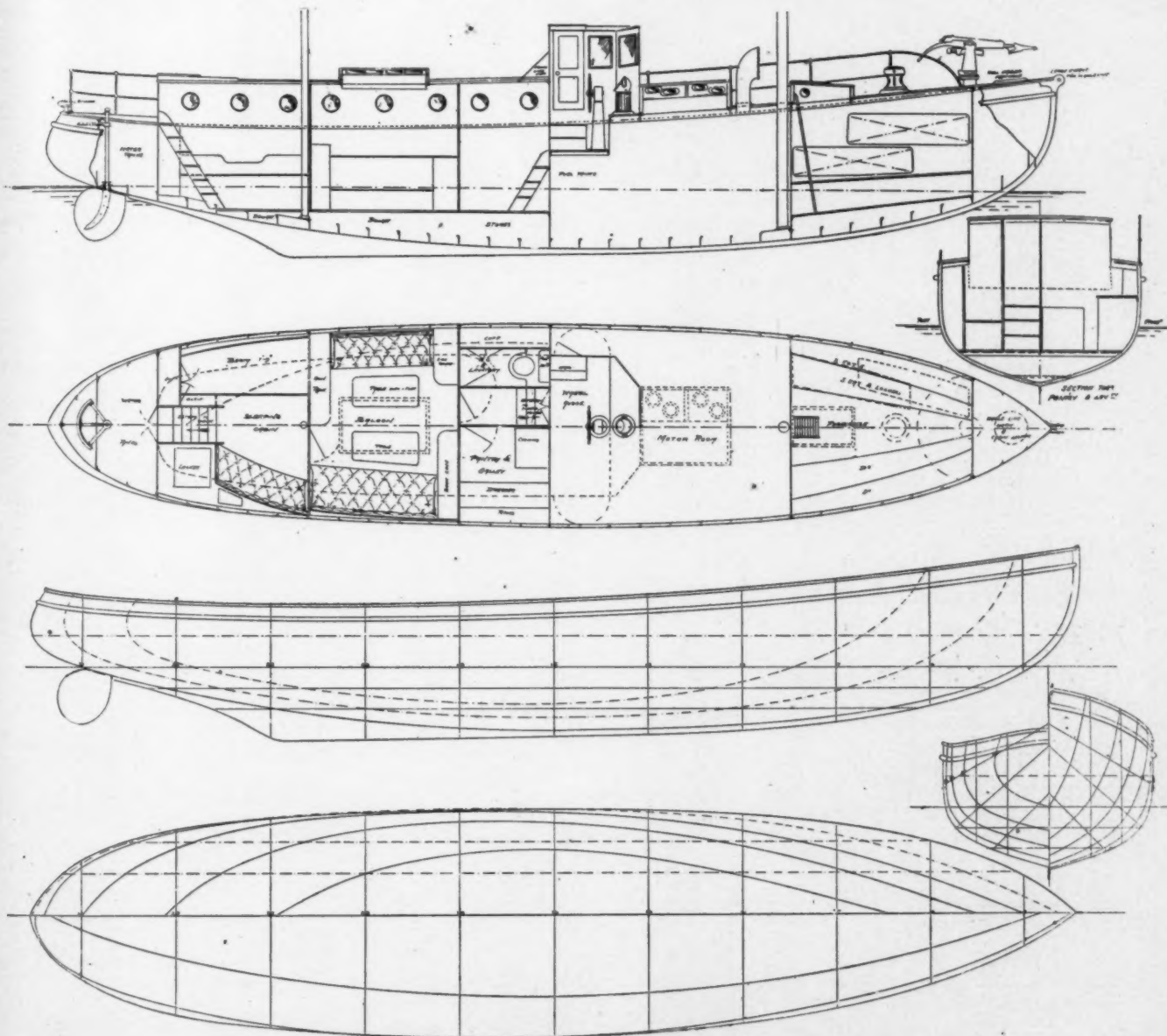
The boat will be of the usual oak and cedar construction, but somewhat heavier than the average, as she will be used practically the year round.

after part of this compartment is the pilot house, the floor of which is sunk somewhat beneath the level of the main deck, and in this house are installed complete steering and control mechanisms. A companionway leads from the pilot house through a passageway to the main cabin, which is fitted with two swing tables and transoms on either side, besides the gun rack, book cases, sideboard, etc. To starboard of the afore-mentioned passageway is an enclosed galley with the usual fixtures, and occupying the corresponding space to port is a toilet room. Aft of the saloon is the owner's cabin with a large berth on the port side and

A V-Bottom Hydroplane.

THE plan on the top of the following page is of a 23½ ft., V-bottom hydroplane recently designed by Wm. H. Hand, Jr., of New Bedford, Mass. The boat is now being built under the designer's supervision for Col. Geo. H. Benyon, of Boston, where she will be raced during the coming season.

In design this boat is of the single step type and the hydroplane features are developments based upon the designer's experience with other small racers of similar type. The



The 50-foot steel motor yacht designed by Linton Hope, of London, for use along the east coast of Africa.

A Motor Whaling Yacht.

THE plans shown herewith are of a 50-foot steel whaling yacht, designed by Mr. Linton Hope, of London, for Mr. N. W. M. Bell, for whaling and sporting trips along the east coast of Africa.

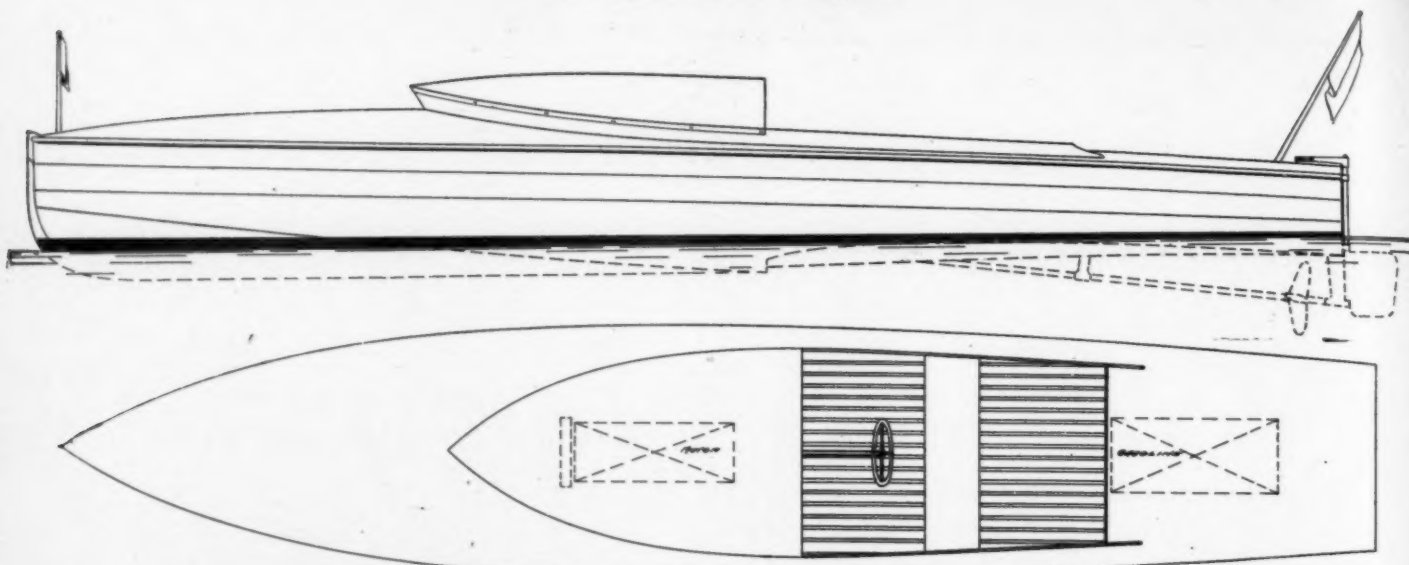
Her dimensions are: Length over all, 50 ft.; beam, 10 ft.; draft, 3 ft. 8 in., and her power plant will consist of two 60 h.p. Maudslay motors, driving twin screws. As an auxiliary means of propulsion she carries an auxiliary rig with two substantial masts stepped on the keelson. Below decks there is a whale line locker in the eyes, with a man hole hatch in the deck. Next aft is the forecabin with sleeping accommodations for four men. The motor room is next aft separated by a steel bulkhead from the forecabin. Above the

transom to starboard. From this cabin a companionway leads to the short after deck, and there is a fourth steel bulkhead at this point, aft of which are installed large freshwater tanks.

The construction of the boat throughout, including the cabin sides and pilot house is of steel, but the decks and cabin roofs are of teak. The boat will be named Cachalot, and we hope that she will live up to her name, when she invades the whaling territory.

With her total of 120 h.p. it is expected that Cachalot will do in the neighborhood of 12 knots, and with her substantial rig she should be entirely independent of her motors. It will be noticed that a harpoon gun is mounted on the deck forward just above the hatch for the whaling line, and there is a large sheave on the stem head, over which the latter will run.

under-body is not unlike that of Miranda IV. and Zigarella, the famous Thornycroft sisters. The construction, however, is much simpler and is of the type frequently employed so successfully by Mr. Hand, in connection with his "V-bottom" boats. The bottom planking is laid cross-wise and the side strakes fore and aft, and no steam bending or calking are employed in any parts of the work. The motor, which will be installed in Col. Benyon's boat, is a special light-weight, two-cycle, four-cylinder machine, of 4½ in. bore and 4½ in. stroke. All details of the motor and its equipment are to be very light and arranged to give maximum power and speed. The general dimensions of the boat are length over all, 23 ft. 6 in.; beam, 4 ft. 6 in.; draft of hull, 6 in., and the estimated speed is from 28 to 30 miles per hour.



The V-bottom Hydroplane designed by William H. Hand, Jr. The dotted bilge and keel lines give an idea of her interesting underbody.

A 35-Foot Cat Yawl.

BELOW are shown the profile and plan of a 35-foot auxiliary cat-yawl, of 13½ ft. beam, which was designed by, and is being built at the yards of L. A. Coombs, Belfast, Me. Under the forward part of the cabin trunk is an enclosed galley with ice box, stove, sink, and the usual fixtures, and just aft of this is the main cabin with transom berths along sides. In the after part of the cabin trunk is a small stateroom with berth and lavatory. The cockpit is a large one, with a seat extending completely around it and with the motor, a two-cylinder machine of the medium duty, two-cycle type, installed under a housing.

A 75-Foot Passenger Boat.

ON the following page is shown the design of a 75-ft. passenger boat of the Valley Boat and Engine Co. of Saginaw, Mich., which company will build a boat to these

plans. The hull is of a sturdy type rather symmetrical fore and aft, and is heavily constructed. The crew's quarters and galley will be below the forward deck and next aft there will be a dining saloon capable of seating quite a number of people. Above this there is a deck house divided into pilot house forward and stateroom aft. The engine room, containing three 24 h.p. motors, is amidships and contains also the fuel tanks. The main saloon occupies the remainder of the space beneath the trunk cabin, and there is a toilet room on either side of the companionway aft.

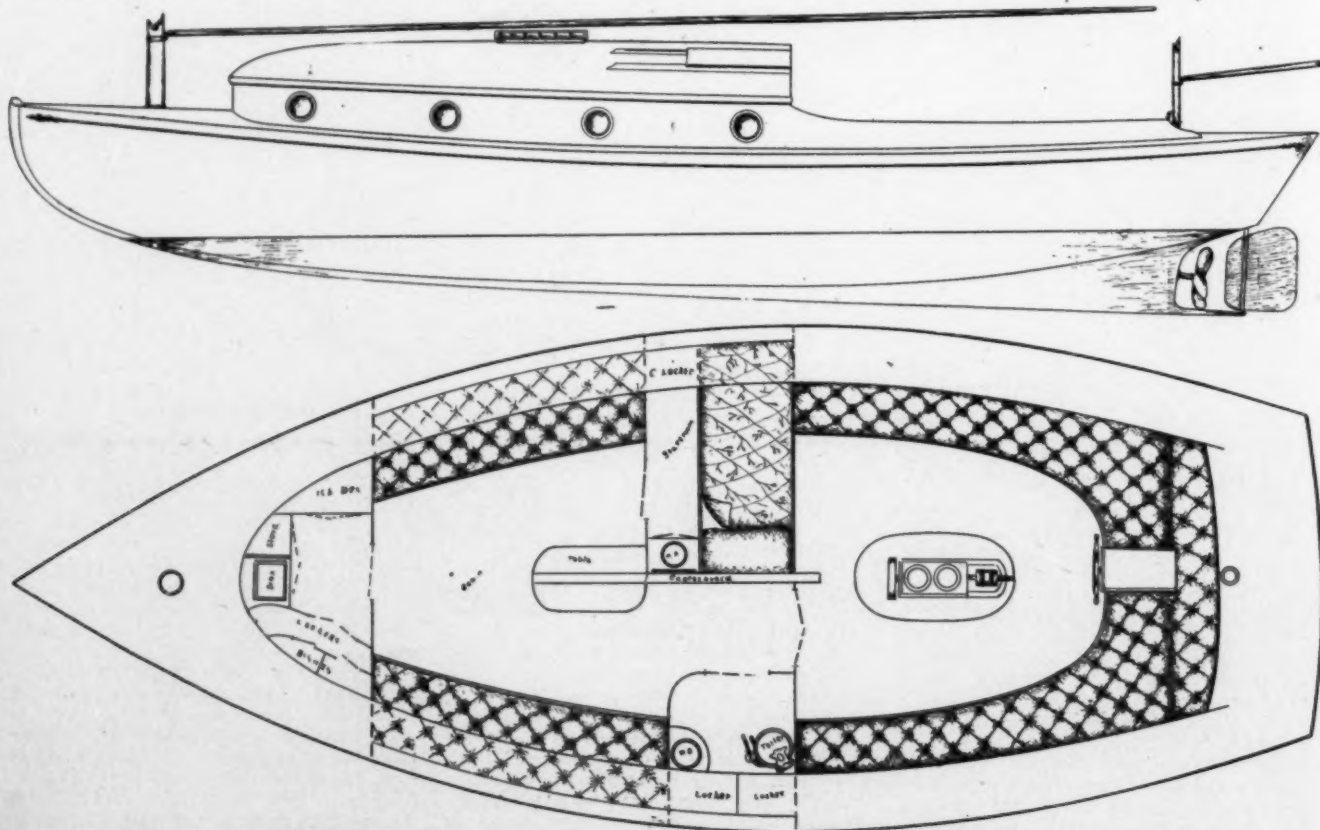
A Fast Day Cruiser.

THIS boat is of the combination raised deck and trunk cabin type, affording a very roomy, comfortable, and thoroughly ventilated cabin, a toilet room with lavatory, and a good sized galley in which is fitted a large ice box, together with stove, sink and ample dish lockers. The bow is graceful,

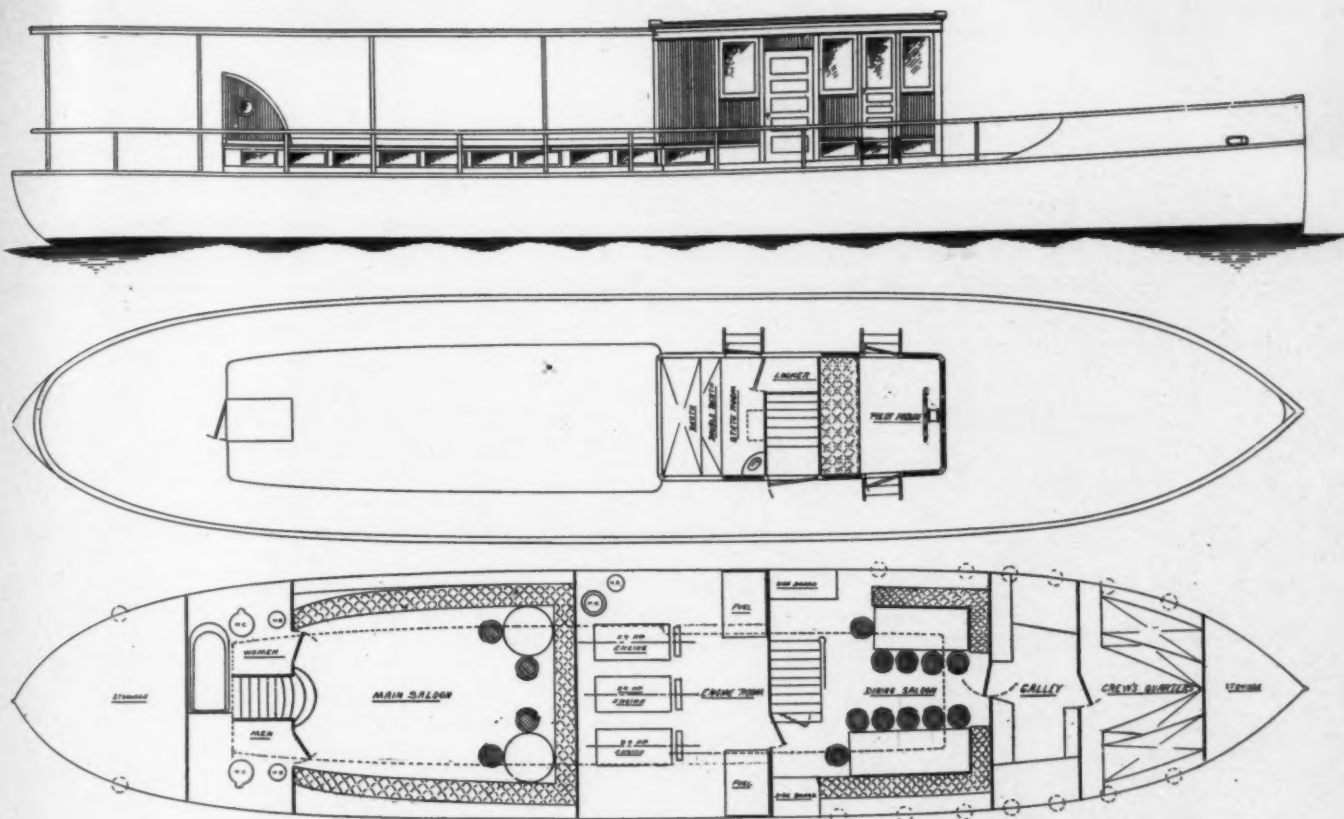
showing slight overhang; the stern of "V" transom type, with short after deck, giving a large cockpit aft of the cabin. This cockpit accommodates eight wicker arm chairs, and being fitted with a wide stern seat, affords a seating capacity for ten persons in addition to steersman. The cabin has sash windows, which are made to drop into pockets when open; it is fitted with extension transom berths and two large wardrobes.

The boat is controlled from the bulkhead at after end of cabin, on which is mounted the steering wheel, auto style, with spark and throttle controls within same. The clutch and reverse lever is close at hand, connection being carried under flooring from engine room.

The construction of the boat is as follows: Stem and stern posts and frames white oak; keelsons, stringers and clamps of yellow pine; planking of ¾ in. white cedar, copper fastened throughout, and riveted on burrs; above sheer streak, cabin, coamings, lazy back, after deck and entire interior are of selected Mexican



The 35-foot cat-yawl designed and being built by L. A. Coombs, of Belfast, Maine, should make an excellent cruiser.



A 75-foot passenger boat recently designed by the Valley Boat and Engine Co., of Saginaw, Mich.

mahogany; the forward deck is of white pine, canvas-covered and painted.

The gasoline tank, of extra heavy copper, with swash plates riveted and sweated to sides, is of 150 gallons capacity, and is placed under deck at bow, and set within a drain pan with drain tubes leading outboard through hull for safety in the event of any possible leakage or overflow of gasoline, and feed supply is carried to engine room through pipes outside and running next to keel with only outboard connections, eliminating danger from fire caused by saturated bilge.

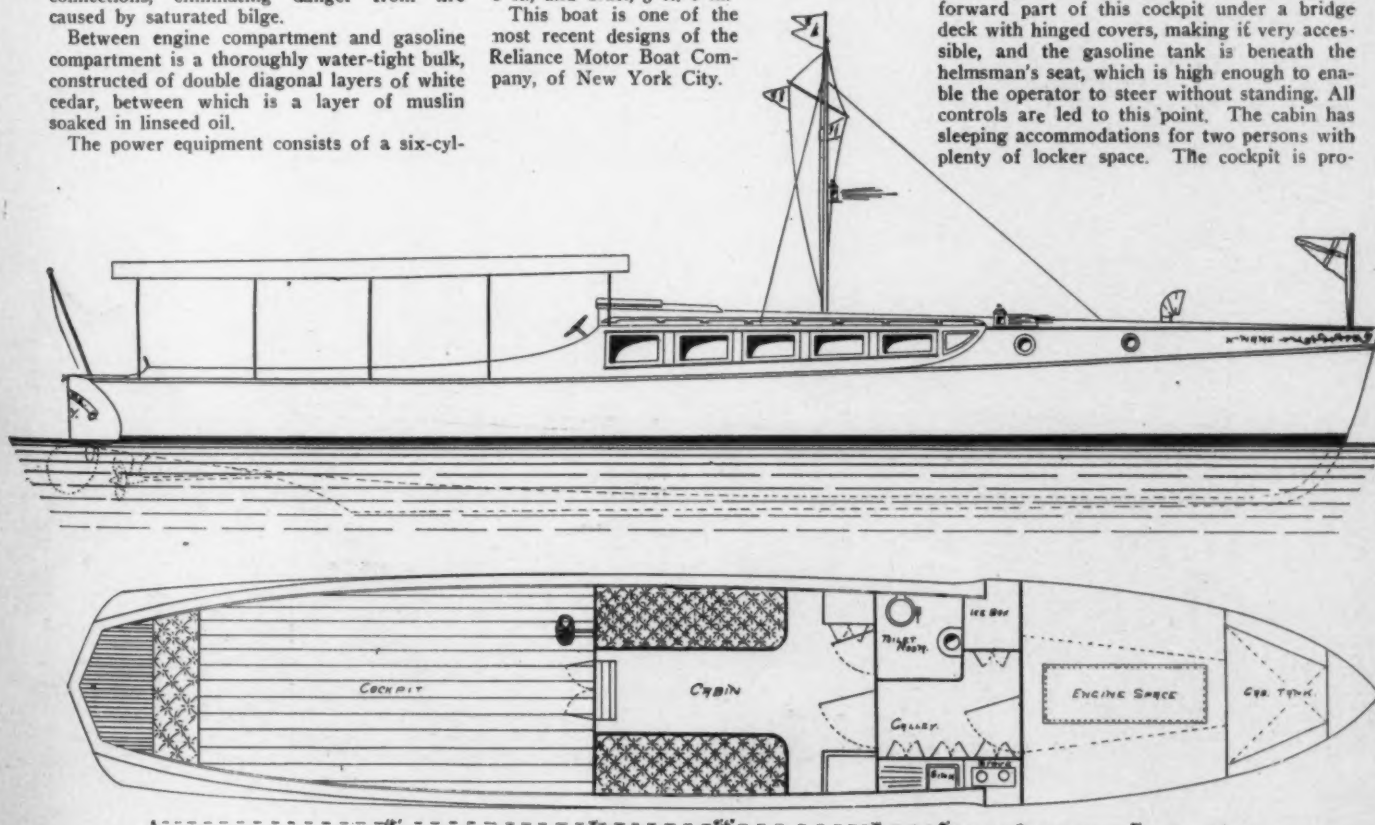
Between engine compartment and gasoline compartment is a thoroughly water-tight bulk, constructed of double diagonal layers of white cedar, between which is a layer of muslin soaked in linseed oil.

The power equipment consists of a six-cyl-

inder Scripps motor (four-cycle), developing 100 h.p., with Bosch magneto ignition.

This type of boat makes an excellent ferry for the waters around New York, such as the Hudson River, Long Island Sound, to and from Atlantic Highlands, etc. She has a pronounced flare forward, and high freeboard, and should prove a good boat for the purposes for which she was designed. She is expected to make a speed of 20 to 22 miles per hour. Her dimensions are: Length over all, 46 ft.; beam, 8 ft., and draft, 3 ft. 6 in.

This boat is one of the most recent designs of the Reliance Motor Boat Company, of New York City.

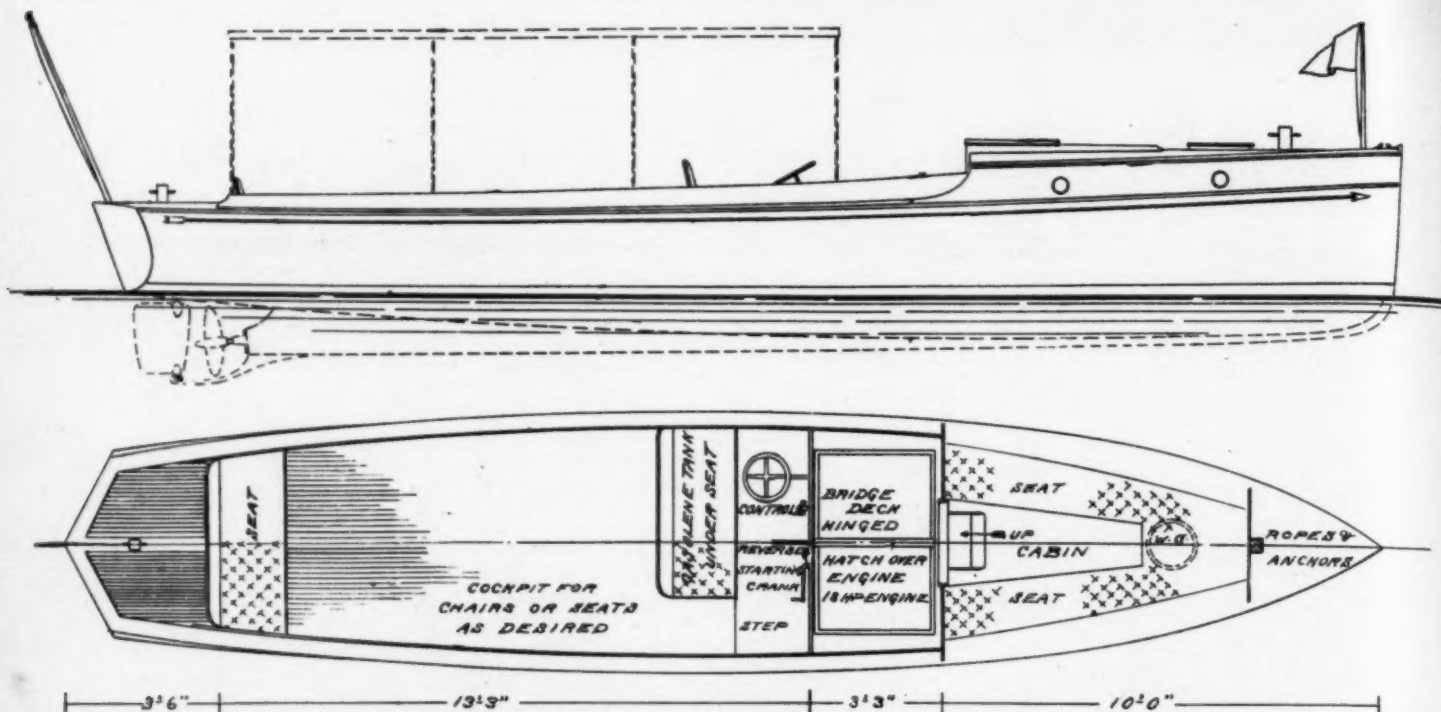


The first day cruiser designed by the Reliance Motor Boat Co., of New York, is well suited for ferry service on Long Island Sound or the Hudson River.

A 30-Foot Day Cruiser.

THE profile and plan shown at the top of the following page are of a design recently completed at the office of Arthur P. Homer, of Boston. The small cabin forward is large enough to give protection to a number of people in case of bad weather, and can sleep two persons comfortably.

She is of the raised deck type with a large cockpit to accommodate a number of people on short day runs. The motor is installed in the forward part of this cockpit under a bridge deck with hinged covers, making it very accessible, and the gasoline tank is beneath the helmsman's seat, which is high enough to enable the operator to steer without standing. All controls are led to this point. The cabin has sleeping accommodations for two persons with plenty of locker space. The cockpit is pro-



The 30-foot day cruiser designed in the office of Arthur P. Homer will be equipped with an 18-25 h.p. motor.

ected by an awning to which will be fitted curtains for use in bad weather. The construction is of oak and hard pine, planked with cedar and finished in mahogany or oak. The power plant will be an 18-25 h.p. motor, which will give her a speed of from 12 to 13 miles an hour. The general dimensions are, length over all 30 ft., beam 6 ft. 4 in., and draft 2 ft. 2 in.

The boat should make an excellent one for gunning and fishing trips and week-end cruises, and also for accommodating a large party on day excursions.

A Fast 60-Footer.

THE 60-footer shown below was recently designed by Morris Whitaker, of New York, for Mr. Charles S. Thorne, and a boat of this type is now under construction by the Sharptown Yacht Building Co., of Sharptown, Md., for use on Great South Bay. The boat is of the raised deck type, with glass cabin trunk extending somewhat aft of the raised top sides. She will be fitted with a 60 h.p. Lamb motor of six cylinders, 6 $\frac{3}{4}$ in. bore by

7 in. stroke, developing its horsepower at 450 r.p.m., and especially designed for the cruising type of boat.

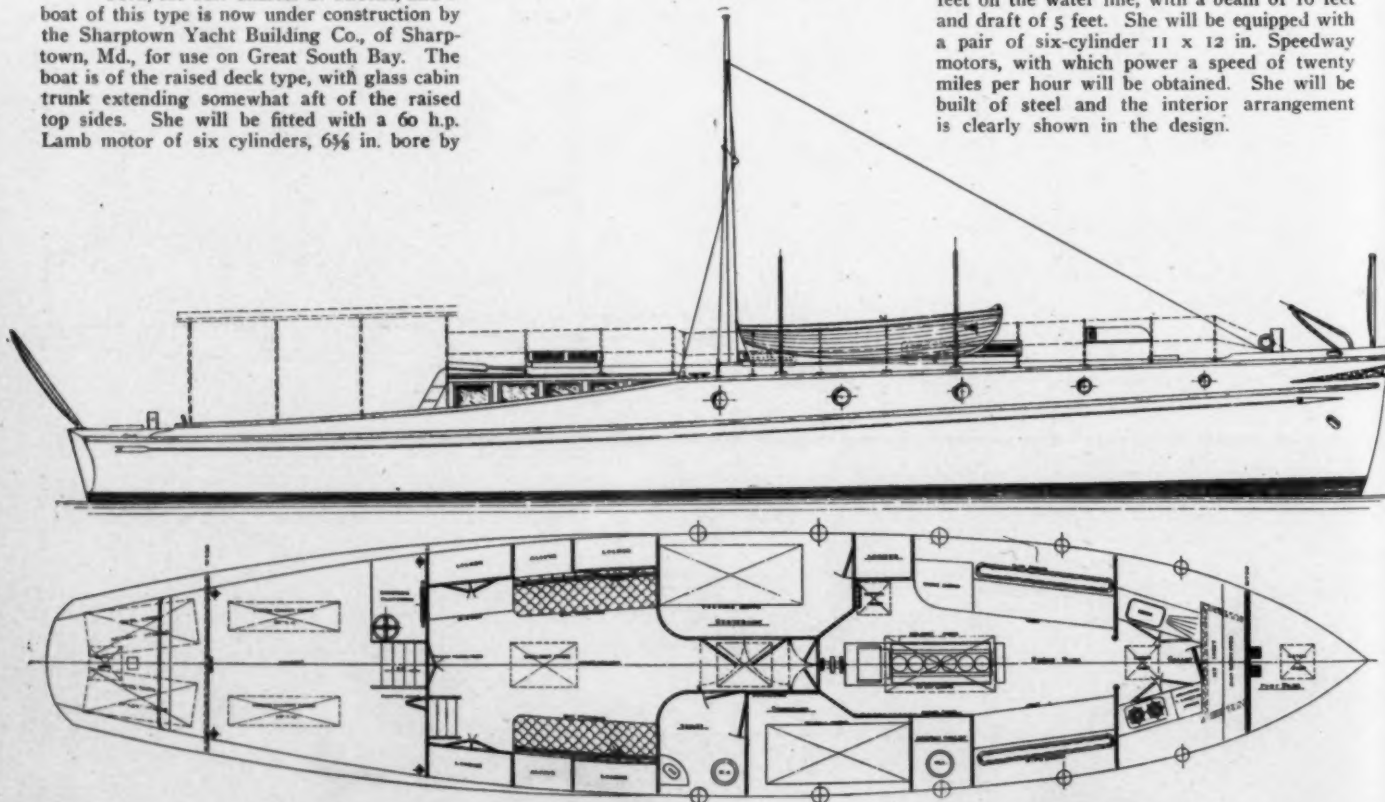
All controls are led to the steering position at the after end of the house. The hull has been given considerable flare forward and sufficient dead rise to insure seaworthiness, although the over all draft has been kept moderate. The arrangement shows a large cockpit aft with steering and control mechanism installed on a raised platform to port. The main cabin occupies the after end of the trunk and is well lighted and ventilated by drop sash and windows. Forward on either side of a passageway are two single staterooms and a toilet room with a unique arrangement of doors to insure privacy. The engine room is

next forward and contains sleeping arrangements for two men. The galley occupies the forward part of the boat. The hull is strongly but lightly built, the framing being of oak planked with cedar.

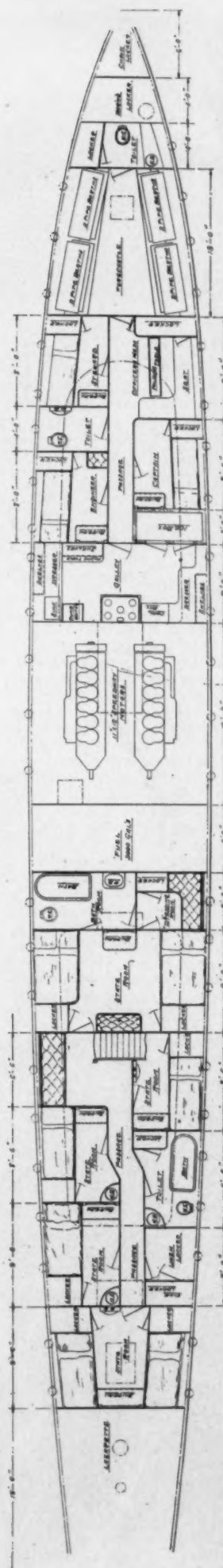
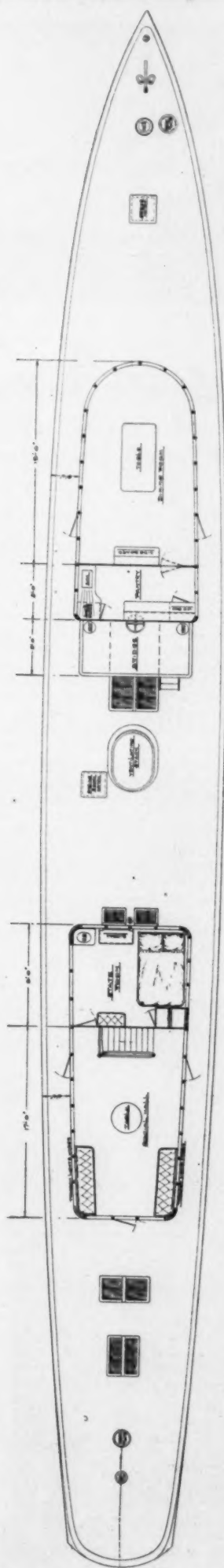
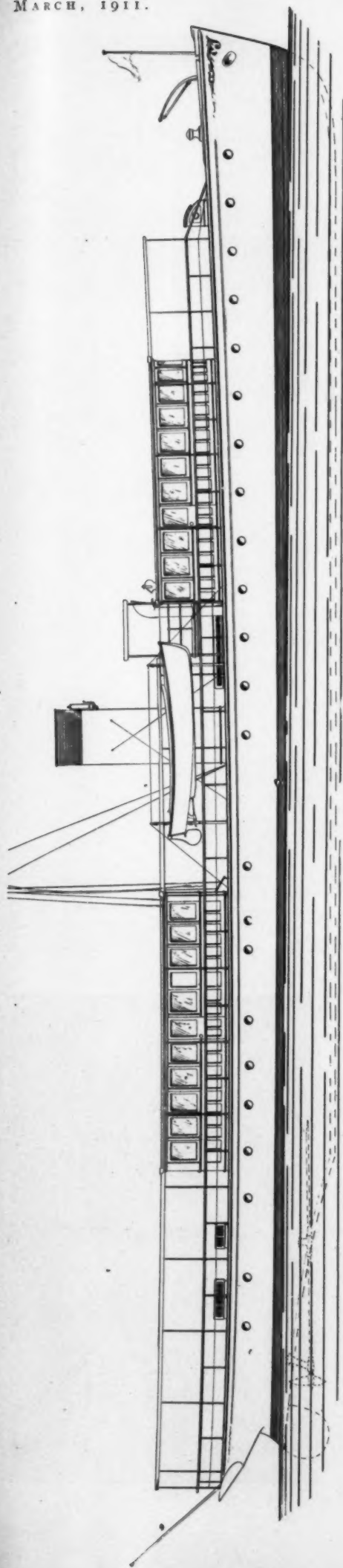
The New 138-Footer.

ONE of the largest motor yachts thus far designed and one of the most interesting is shown on the following page. The design is from the board of the Gas Engine and Power Co. and Chas. L. Seabury & Co., Cons., and a boat to it will be built by that company for Mr. Morton F. Plant, of the New York Yacht Club.

The new boat will be 138 feet over all, 131 feet on the water line, with a beam of 16 feet and draft of 5 feet. She will be equipped with a pair of six-cylinder 11 x 12 in. Speedway motors, with which power a speed of twenty miles per hour will be obtained. She will be built of steel and the interior arrangement is clearly shown in the design.



The 60-footer designed by Morris M. Whitaker will be equipped with a 60 h.p., six cylinder Lamb motor.



The 138-foot steel motor yacht which has just been designed and will be built by the Gas Engine and Power Co., and Chas L. Seabury & Co., Cons., for Morton F. Plant, of the New York Yacht Club.

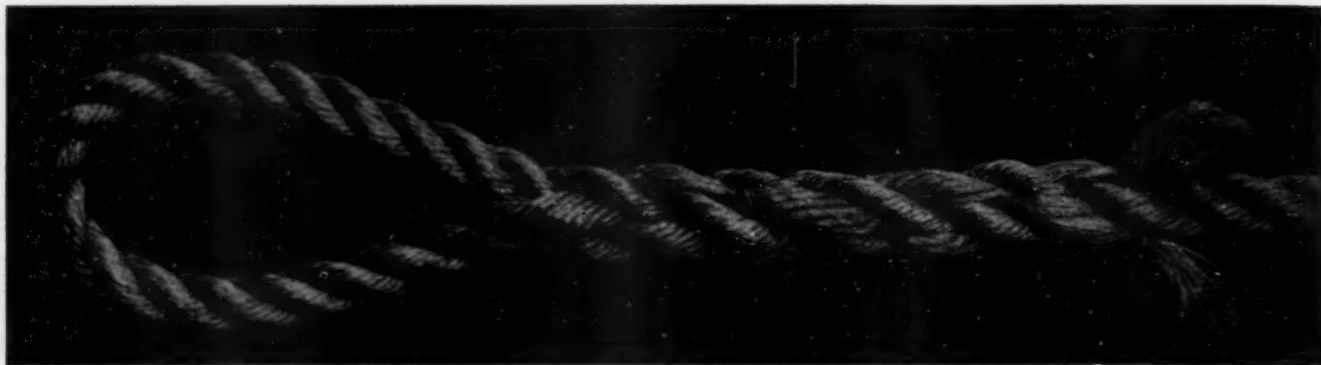


Fig. 1.—The finished eye-splice, when properly made, is nearly as strong as the rope itself.

Making an Eye Splice.

One of the Commonest Splices and That Most Frequently Used on the Motor Boat, Together With a Number of Practical Suggestions for Handling Rope in General.

By W. E. Partridge.

EVERYONE who has anything to do with boats, whether power or sail, soon finds that it is convenient to know something about ropes and their handling.

Among the first things which it seems advisable to know how to do with a rope is the making of an Eye Splice, that is fastening the end of a rope into itself by a splice so as to leave a loop in the end of the rope. This accomplishment is simple and, when the principles are understood the splice can quickly and easily be made by anyone.

All ordinary rope is composed of three strands which may be easily separated, and, with a little untwisting, opened out so that other strands can be tucked in between or under them. Upon this we depend in making splices of all kinds and doing many other things with ropes that seem wonderful to the uninitiated. Although the rope appears like a round, solid body, it has a large quantity of empty space. Its circle is really made up of three circles, where seen endwise. In fact, the "scores" in a rope take up nearly one-quarter of its whole cross-sectional area.

To begin with, making an eye splice one needs a piece of rope; any piece of three-strand rope will answer, but perhaps the most convenient is half-inch Manila, as that is long enough to be handled easily. Ordinarily clothes line will answer, but it is better in

the beginning to get a new piece of rope than to try to handle an old piece. Rope is cheap and a ten-cent piece will buy enough to do a lot of practicing with. Six or eight feet in length is ample.

While not many tools are needed in splicing, even the beginner needs a marlin spike and a knife, though an expert would hardly think anything necessary in the way of tools when working on half-inch rope, using his fingers instead of tools. The beginner will find the trouble of making a substitute for a marlin spike from wood will be well repaid. Any piece of hard wood like part of the handle of an old broom sharpened to a point, as shown in the photograph, answers very well. It should be 18 or 20 inches in length. Of course, a regular marlin spike is needed if one really has much work to be done, as it is stronger and the point does not get bruised out of shape. It is about an inch in diameter at the larger end. The object of the marlin spike is to raise a strand and make a space so that another strand may be put through the opening.

Having unlaidd the strands and secured them from further unlaying, it is a good plan for the beginner to tie the end of each strand, as it saves some annoyance when one is not certain of his work.

Splicing is a means of joining ropes together by interweaving the strands, basket fashion, over and under, and the strength is obtained by the friction of the strands upon each other. A splice is usually but little larger than the rope itself because the extra strands are forced into the scores or vacancies of the rope, hence while there is more material and the rope is more solid it is but very little larger than at other portions. When what is called a "long splice" is made in joining two ropes the splice is no longer than any other portion of the rope.

To go on with our eye splice, when the strands are unlaidd and the ends secured, each being bound, as well as a tie about the rope at the point to which the strands are unlaidd, bring this point around against the rope to form an eye of the desired size. If the end is on the right-hand side of the main part of the rope, as in Figure II, the uppermost strand will cross the body of the rope parallel with the strands. Turn the eye over and the strands will seem to cross those of the main rope as in Figure III. Then turn the eye back again as in Figure II, and lift the strand B, in the body of the rope (standing part) with the marlin spike so that the end of the strand A can be put through under it in the direction shown by the arrow. The strand will then have a backward twist. Turning the eye over it will appear as in Figure IV. Next lift the strand of the rope next to B in Figure II and tuck No. 1 under it. Then tuck No. 2 under the remaining strand. If this strand is tightly

twisted a bad lump will result, so it is best to untwist it a little to make it lie flat. It should be untwisted so that it goes over the strand smoothly.

All the strands having been tucked once the remainder of the work is easy, being a simple repetition of the tucking. Each strand is taken over one strand and under the next. The beginner will continue this until his ends are used up. When one can tuck the strands regularly without bungling the job, it is well to undertake it in a ship-shape manner. Having tucked each strand once in the manner described, they are tucked the second time in the same way. When ready for the third tucking separate the yarns of which each strand is composed, leaving out one-third and tucking the two-thirds. Then leave out one-half of the remaining yarns and tuck the others. Some tuck the divided strands twice at each division. The projecting strands are then cut off short, except the last ends, which are left longer. On half-inch rope they may be left an inch long. On large ropes they are left longer and frequently whipped. In cables the strands are often left full size and tucked four times, a neat taper not being at all important.

Each time a strand is tucked it should be pulled tightly so as to bring the parts to a firm bearing. After the splice is finished, drop it on the floor and roll it under the foot to



Fig. 2.—Right position for starting splice.



Fig. 3.—The other side of Fig. 2.



Fig. 4.—Starting the splice—one strand tucked.

compress it, and make it round. This gives compactness and a finish that it seems difficult to get in any other way. Figure I shows the finished splice properly tapered. Thus made, it is amply strong for ordinary work, but it is not quite equal to the rope itself.

Some of our readers who have had but little experience with ropes and their handling, may need some elementary instruction, and, by the boys, in any event, this will be welcomed. Ropes are composed of fibres which, twisted together from yarns and these yarns in turn are

twisted into strands which, twisted again form ropes. Most ropes, like those shown in our photographs, are right handed. The three strands of which they are composed are twisted in the opposite direction and the yarns are like the rope right handed.

In order to observe the twist of the parts a rope may be taken apart and the strands put together again for considerable distances without injury. By a little untwisting of a rope between the hands a strand may be lifted or the finger put under it. By so lifting a strand a small rope or another strand can be put into a rope. In Figure V, a strand is shown tucked several times into a larger rope just as would be done in making a splice. The strand put in goes regularly over and under the strands of the rope. The more times a strand is tucked the greater the pull required to take it out. The single strand shown would require a pull of 75 or more pounds to move it, though it is of hard, smooth, braided cotton and has but little friction. When very great strength is needed as in long splices that have to run over pulleys the strand that is tucked is brought back and tucked under the same strand. This, in effect, winds one strand around the other and greatly increases the friction. Old sailors look upon this as illegitimate and altogether improper. Nevertheless it has its uses.

Tapering the strands is easily done and makes any kind of a splice much neater than when the strands are left full size. Merely separate the strand into halves or thirds, etc., leaving the under yarns out when tucking the remainder of the strand. When finishing, the ends are not cut off very closely because as the rope wears they draw in or are worn off and so disappear.

Putting a tie or a whipping about the end of a strand or around a rope at the point to which it is unlaid for splicing seems a simple thing that might be neglected, but the beginner will find that the half minute expended

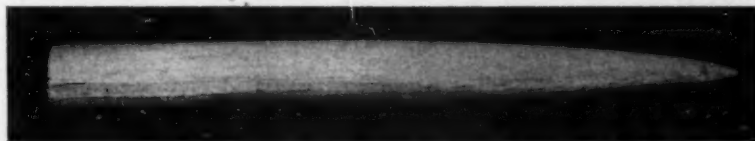


Fig. 6.—A marlin spike made from a broom handle.



Fig. 5.—Cord inserted under strands of rope to show method of "tucking."

in putting on the piece of twine saves a great deal of time and in the end makes a much neater job than is possible with everything at loose ends. With the advent of the numerous patent fastenings and other devices, the art of making knots and splices has taken a decided slump, but the seasoned motor boatman will never be satisfied with substitutes and the newcomers should give some attention to details such as these.

Hints for the Amateur Boat Builder.

The Value of a Good Set of Plans to the Man Who Builds His Own Boat.
Some Things that Should be Considered Before Starting the Job.

A JOURNEY along the waterfront or to the yacht basin is certainly an interesting pastime for a lover of water craft; here, along with the creations of the accomplished naval architect, which are put together by competent workmen capable of executing their ideas and materializing them into things of symmetry and grace, you will see the offspring of the amateur boatbuilders.

Some of these, it is true, rival the productions of the professionals, but the greater part of them are nondescripts, both in design and build, and seem to the trained eye of the experienced boatman to be the result of a disordered imagination. It would seem in this day, when good plans are so easily obtainable and so moderate in cost, that there should be no excuse for these mistakes in design and waste of good materials.

It does not matter how much good lumber and good fastenings the amateur builder may have, if he has not a good model or design to start with all his good materials will be wasted and there will be dissatisfaction with the results.

If he does not want to pay a designer for a special set of plans, he can get from *MOTOR BOATING*, or some similar magazine, the names of those who supply stock plans. The man must be hard to suit who cannot get about

what he wants from these, and this investment is not money thrown away or needlessly spent, because these plans will save him much more than their cost in the avoidance of mistakes and the saving of materials, and along with this is the further satisfaction of knowing that he is getting everything properly proportioned in regard to strength and weight.

Most amateur builders use good materials; in fact, they put in clear lumber in places where a lower grade would do just as well. In putting on the cabin and installing the seating he is very apt to imitate the work of the house carpenter instead of the boatbuilder, and a little attention to the little "kinks and wrinkles" in this line will amply repay him.

Let him pay careful attention to the timbers of the engine bed, have them as long as possible fore and aft, and fit and fasten them well to the timbers, for there is a heap of satisfaction in having your engine set up so that there is no vibration.

Plan the lead of the tiller ropes so that there will be no chance for them to jam or chafe through; also have them accessible, so they can be got at in cases of emergency.

See that the gasoline tank is perfectly tight before it is put in, and then install it so that it cannot jar loose; also put it in so that it can be removed without tearing off the deck

in case you want to take it out at any time.

Now, a few words about choosing an engine. How many times have we known a good engine to be taken out of a boat and condemned because it was a misfit for the boat in which it was installed? Would a farmer hitch his span of heavy draft horses to his light buggy and expect to get speed out of them, just because the power was there; or does the speed of the race horse count for power when he is hitched to a load of brick? Use good judgment in selecting an engine for the boat. If you have a heavy hull with full lines, get a good, slow-duty, heavy-weight engine to do the work; if you have a nice, easy-lined pleasure hull for a family boat, install a medium-weight, moderate-speed engine, and see how nicely it fits the job.

If you have the "speed bug," build your hull as light and fine as possible, save every ounce of weight that you can, and install an engine with high speed and every bit of superfluous weight eliminated, and you will get the results sought after.

Don't think you can get a boat that will be a cruiser, a racer and a family boat all in one, but decide on what uses you will put the boat to for the greater part of the time that you will need her, and then build the boat and select the engine to fulfil these requirements.

How to Make a Spray Hood.

Six Distinct Types of Hoods for a Wide Range of Conditions Described and Illustrated. How They May be Constructed at Home by the Amateur.

THE PRIZE CONTEST—Answers to the Third Question in the January Issue.

Easily Raised and Lowered.

The Prize-Winning Answer.

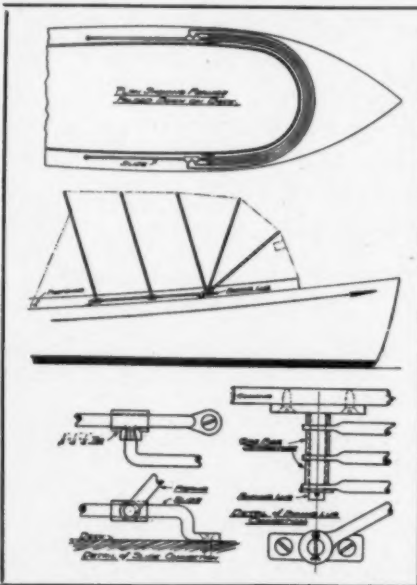
A GOOD practical spray hood, one that will stand hard service, without being unnecessarily cumbersome to handle, can be made by the average boatman.

From the drawing it will be seen that the frames are made of ordinary galvanized awning rods $\frac{1}{2}$ -inch or more in diameter, according to the size of the boat. The one described consisted of five $\frac{1}{2}$ -inch galvanized rod frames bent to suit the forward end of the coaming, clearing each other by about $\frac{3}{4}$ inch all around when folded down on the deck. This allows room for the canvas so that the hood will fold down as flat as possible.

The ends of the three forward frames were flattened out and drilled to slip over a galvanized awning lug fastened to the coaming. These lugs are used on wagon covers and can be easily purchased. Small pieces of gas pipe were slipped on between the ends of rods to act as separators, and a washer and split pin put through the end.

The ends of the last two frames were bent in at right angles and threaded $\frac{1}{4}$ -inch pipe threads, screwing into $\frac{1}{4}$ -inch x $\frac{1}{4}$ -inch tees, which worked on slides made of $\frac{1}{2}$ -inch galvanized rod screwed to deck. The threads in the run of the tees were reamed out smooth (a round file will do the trick) so that they would not wear on the galvanized slide. The

screwed joint between the tees and rods must act as a swivel when folding the hood, and consequently must be well greased and not



W. E. Motz's spray hood is very easily raised and lowered.

screwed up far enough to bind. If this is done, no trouble will be experienced from rusting and binding.

The distance between frames, of course, can be varied to suit conditions, anywhere from 15 inches to 24 inches. So much for the framing.

The cover was made of 10-ounce duck fitted over frames and pocketed on inside for same. A small celluloid window, 6 inches by 8 inches, was sewed in the front of the hood. This celluloid is made especially for motor boat and automobile curtains and can be readily purchased. To hold the hood back, a flap of canvas is extended back as shown, and hooked to the coaming. This was all that was required to hold the hood in place, and when it became necessary to suddenly lower the same, as was often the case, it was only necessary to unhook the flap and fold the hood forward on deck.

W. E. Motz. Philadelphia, Pa.

The Melon Type.

AS the "melon" hood is the most advantageous type for use in my boat, I took measurements of portion of cockpit I wanted covered, and obtained the following material:

A pair of brass side plate, row-lock sockets and a length of $\frac{1}{2}$ -inch brass pipe (soft) so I could bend it easily into a semi-circle, fit-

The Prize Contest in Questions and Answers

JUDGING from the number of letters received from all parts of the country in praise of it, the contest department seems to be gaining steadily in popularity, not alone among those of you who contribute to it, but among all those who read the magazine. This popularity is due not so much to our efforts as to those of the contributors, and so we pass on to you the commendations we have received.

IN order to do justice to the contest this month, because of the large number of illustrated answers, we have been compelled to devote six pages to this department, and even then we could have filled several more pages with good answers. Six distinct types of spray hoods are shown and, although there were a number of others of each of these types, we have been able to include but one representative of each. There are some mighty good suggestions in the answers to both the galley and tender questions, and here, too, we have endeavored to choose those of most value to the general reader.

THE questions printed below, for the May contest, offer an opportunity for every one of our readers to come in. You may have worked out a set of screens that would be of value to the rest of us; you may have ideas of your own on choosing a propeller, and the chances are you have learned something since last year that will help the newer members of the fraternity in fitting out their boats for the coming season. Again we say—come on in.

THE QUESTIONS FOR THE MAY CONTEST ARE THESE:

Describe, with drawings if necessary, the best method of constructing stationary or folding boxes or screens for side-lights together with method of attaching them.

Suggested by Halve Maene, Boston, Mass.

How can the amateur determine the proper diameter and pitch of the propeller best suited to his engine and hull?

Suggested by Alton G. Cook, Petoskey, Mich.

What have you learned since last fitting out time that will lead you to do the job differently this year?

Suggested by Richard Bohn, Fort Wayne, Ind.

ANSWERS to these questions, addressed to the Editor of MOTOR BOATING, 381 Fourth Ave., New York, must be: (a) In our hands on or before March 25, (b) not over 500 words long, (c) written on one side of the paper only, (d) accompanied by the senders' names and addresses. (The name will be withheld and initials or a pseudonym used if this is desired). Questions for the next contest should reach us on or before the 25th of March.

THE PRIZES ARE:

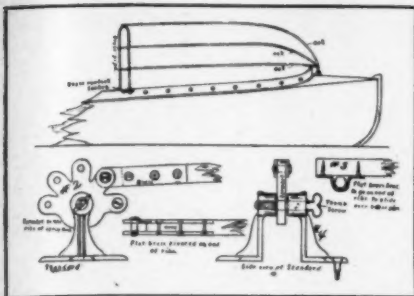
For each of the best answers to the questions above, any article advertised in MOTOR BOATING, of which the advertised price does not exceed \$25, or a credit of \$25 on any article advertised in MOTOR BOATING, which sells for more than that amount.

(There are three prizes, one for each question, and a contestant need send in an answer to but one, if he does not care to answer all.)

For each of the questions selected for use in the next contest, any article advertised in MOTOR BOATING, of which the advertised price does not exceed \$5, or a credit of \$5 on any article advertised in MOTOR BOATING, which sells for more than that amount.

For all non-prize winning answers published we will pay space rates.

When you send in your answer, state what you will take if you win the prize.



E. T. Landers' hood is of the melon type.

ting ends into rowlock sockets which I had tapped to take a small brass machine screw to bind on pipe, holding it firmly in place, as shown in Figure 1.

Four strips of $\frac{3}{4} \times \frac{3}{4}$ -inch oak, bent to required sweep, made supports for covering, the forward ends being fitted with brass straps and machine screwed into sprocket at forward end (Figure 2), and pieces of flat brass or pipe hangers can be used at aft end to support pipe arch, Figure 3. Two standards are screwed to deck to take sprocket. If they cannot be bought a pattern can be whittled out and a casting made and a thumb screw or bolt of right size to allow sprocket to revolve on same complete forward fitting.

For cover, khaki or canvas may be used, with brass ring fasteners at forward end if it extends to deck; if to coaming, only use grommets in cloth, engaging round-headed brass screws fastened to rail.

An apron can be made to cover aft part of cockpit fastened around coaming with grommets and screws as with hoods, and with brass ring fasteners to after edge of spray hood, or a duplicate may be made of the spray hood and applied to after part of cockpit, having them meet at brass pipe with a flap over-lapping to keep weather out.

EDWARD T. LANDERS,
Dorchester, Mass.

Collapsible Hood.

SOME of the points that were taken into consideration in designing a spray hood for a boat 23 feet long by 5 feet beam, were these: When in use to be serviceable and practical and at the same time neat in appearance. When not in use something that could be taken apart and stowed away in lockers, and not have to lay on the decks as most spray hoods that you buy do, or else be left in the boat house when you go out for a little trip.

The frame of the hood is made of well-seasoned oak and is marked "A"-A-"B" in the drawings. To each side of both ends of part "B" is bolted piece "C" by three $\frac{1}{4}$ -inch carriage bolts. Parts "A" slip in between parts "C" and are held by two $\frac{5}{16}$ -inch screws and ring nuts. Four of these supports or frames are used, the two forward ones being 4 feet 3 inches wide and the other two 4 feet 8 inches wide.

To the sides of parts "A"-A" are bolted parts "D" in the ends of which are $\frac{49}{64}$ -inch drilled holes and $\frac{15}{32}$ -inch slots. The center of the first two supports is 2 feet 4 inches from the front end of the coaming. Here drill a $\frac{5}{8}$ -inch hole about $1\frac{1}{2}$ inches above the deck, into which force piece "G." In this piece is a pin $\frac{1}{16}$ inch in diameter that acts as a key for part E.

From here measure 2 feet 6 inches and 5 feet and repeat

the operation. To assemble loosen the nut on screw "E" and push out-board till there is room to slip part "D" between the coaming and the shouldered part of "E," $\frac{3}{4}$ inch in diameter, and the $\frac{49}{64}$ -inch hole will slip on this shoulder. Tighten the nut and the frame will stay there. Between the first support, which is on an angle of about 45 degrees, and the coaming, is a frame with glass in it held to the canvas by eyelets. Between each support are two leather straps with snaps on the ends that snap into screw eyes in the supports. From the last support to the deck aft, are two straps which hold the frame up and help to keep the canvas from sagging. The canvas is held to the frame and coaming by eyelets and cord.

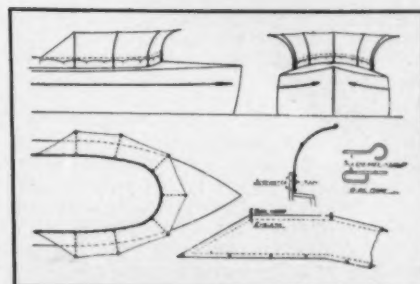
The sloping portion of the hood may be left off and curtains dropped from the last support, making a cabin for sleeping or living quarters.

WALTER J. OLDROYD, Bristol, Conn.

Out of the Ordinary.

THE illustration shows plainly a form of spray hood or shield easily made. The rods are $\frac{3}{4}$ or $\frac{1}{2}$ -inch diameter, and have a straight section equal to the height of the coaming, then bent to the arc of a quarter circle, with eye on end; but the finished rod should be of such a height that the boatman can easily see over the top of it, when at the wheel.

Brass screweyes that will slip the rod are screwed into the coaming, two to each rod, forming a socket for it. The rods are spaced about 15 or 18 inches apart, and as many as the size of boat requires.



L. R. K.'s device does not obstruct the helmsman's view.

After these are in place, the cover can be laid out from 8-ounce duck. This cover is hemmed all around with a rope inserted. The top eyelets are then spaced to reach from eye to eye of the rods, and a wire hook (as illustrated) permanently fastened in the eyelet. This hood engages the eye of the rod. The lower eyelets are then spaced, two between each rod, and engage in hooks screwed into the coaming.

The ends of the cover will be cut off slanting, and an eyelet in these corners will keep the entire cover tight.

The cover is put on, over the rods, so as to maintain the rounded shape.

L. R. K., Philadelphia, Pa.

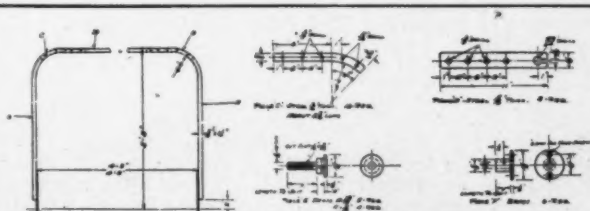
Awning and Spray Hood.

THIS spray hood was constructed by myself of standard fittings that can be bought in any plumbing shop, and I have used it for two years.

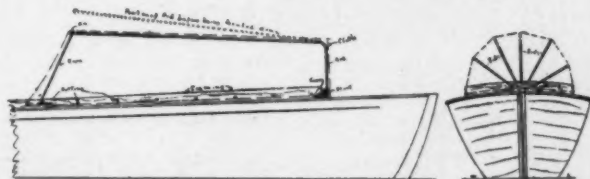
The material used for one arch is as follows:

Two pipe T's. Two Street L's. Three pieces pipe. Two pieces bicycle tubing to telescope pipe freely. Two split pins. Four pipe hanger clips. The pipe used may be $\frac{1}{4}$ -inch, $\frac{3}{8}$ -inch, or $\frac{1}{2}$ -inch brass or iron as desired.

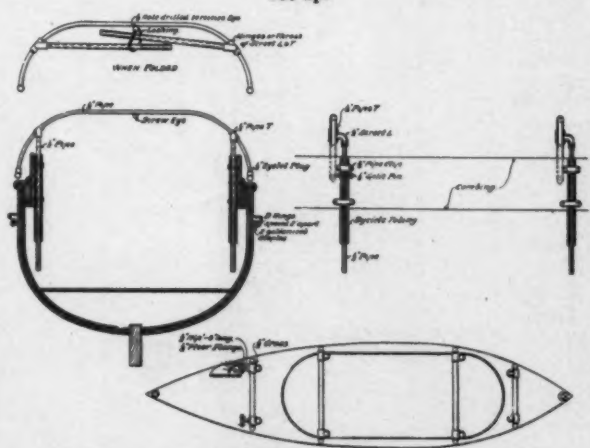
The drawing enclosed shows how these fittings are used, with the exception of split pins, which fit freely into holes drilled through both tubing and pipe at various heights to meet requirements, both as winter cover, storm hood and sunshade. My canvas, which is No. 5 duck and water-proofed, overlaps end arches about 6 inches, and is laced on with cord and grommets. The bow and stern are separate pieces that can be laced on to the end arches by means of end rings and grommets to match the center section, thus completely covering the boat, stem to stern and from port to starboard rail. When the arches are elevated the center ones may be raised a trifle higher than the end ones, which gives a better shape to canopy and also affords opportunity to bring considerable tension on canvas to avoid flapping. I am using pipe crosses instead of T's for my bow arches, to which I screw my light screws by means of floor flange and nipples as shown. This makes it possible for me to carry running lights without having them covered by spray hood, although the decks are completely covered. I also have a circular hole about 24 inches in diameter with an apron covering immediately over the steering wheel, so I may see out when the hood is lashed down all around the rail. This is the best arrangement for very stormy weather or when I wish to sleep aboard, as it gives me full use of the decks for storage and cabin



Mr. Oldroyd's hood is collapsible and may be stowed in a locker.



The hood described by G. T. White is easily constructed and set up.



The combination awning and spray hood described by J. H. Carroll.

full size of the cockpit. For pleasant weather I have a light stripped canvas with scalloped edges, which comes just below the eyelet plugs in the ends of the arches, with light battens about 14 inches apart slipped into sewed pockets, running fore and aft and secured by toggles through grommets at end and center eyelets in arches, this enables me to have one side rolled up and the other side down to provide for slanting rays when the sun is low.

This canvas projects about 2 feet beyond center arches, fore and aft, completely covering cockpit, and does not have to be removed should it become necessary to put the storm hook on.

The advantages of this hood are: It can be made in any size standard pipe, brass, galvanized or black iron. You may use one or a dozen arches if desired, of any width, with adjustable heights. You are able to take up slack in canvas to any degree of tension. It also provides for rain or sunshine, and the entire outfit, including arches, can be stored beneath decks in less than ten minutes.

JOHN H. CARROLL, Buffalo, N. Y.

Extremely Simple Device.

ALTHOUGH the average spray hood is a rather fancy and complicated affair, it is nevertheless a comparatively easy job to make a hood that will answer every purpose, and, in fact, the one herewith described is, in some respects, better

than the regulation hood, inasmuch as it is possible to take the hood down if necessary, and stow it in a locker or any other out of the way place. This is quite an advantage as a hood that lowers around the coaming, is neither beautiful or pleasant to touch, especially when it is wet and soggy. With the hood that is described in this article, it is possible to stow the canvas and rods away, and only leave a small block of wood, and a couple of buttons to be seen on deck. Another advantage of this hood is that it can be made for about 1/10 of the cost of the regular hood.

To begin with you must get a piece of oak or other hard wood, and shape it as shown in the bow view of the boat. This piece should be at least 1 1/2 inches thick, and can be fastened down on the forward deck with two big screws or bolts. This block is to receive the forward ends of the rods. Bore a 1/2-inch hole about 3 inches deep in the top of the block, and then bore the other four holes at even distances between this hole and the deck on either side.

You are now ready for the rods. These are to be made out of 1/2-inch galvanized iron rod, and they should be bent as shown in the dotted line on the profile drawing. This will give them spring enough so that when they are pulled down into place with the rope end they will hold the canvas cover out tight and smooth. Of course the rods don't have to be bent just the shape shown in the drawing, but it is better not to give them too much of a curve, or you will

not be able to sit well up in the bow when the hood is raised. See that all the rods are the right length, and then drill a small hole through the end from the top down, and drive a steel pin about 1 1/2 inches long through the hole so that half an inch or more projects through the top. This pin is for the purpose of making a projection so that the rope will not slip off the end, and also so that an eyelet can be cut in the canvas to allow the pin to come through to hold the cloth from slipping forward.

The canvas can be cut out of one piece and there is very little fitting to do. The flap that folds down in front can have a mica or celluloid window in it so that you can see through it to steer when the top is in place. Cut a lot of eyelets around the lower edge of the canvas, and screw a lot of curtain buttons all around the lower edge of the coaming, and also put a couple in the forward side of the block.

To raise the cover in place, you must put the rods in their places, and then throw a light rope over the pins in the after end of the rods, fasten this rope to the outside of the coaming, and then haul down until the rods are in their right places; fasten the rope to a cleat, and you are ready for the cover; throw this over the rods and button the forward flap to the block and then work aft until the entire cover is fastened down. You now have as good and strong a hood as it is possible to make, and one that easily taken down and stowed.

GERALD T. WHITE, New York City.

What is the Best Galley Arrangement?

Practical Suggestions for Laying Out the Galley and Pantry Where Space is Limited. The Big Problem of the Little Cruiser Solved by Our Readers.

THE PRIZE CONTEST—Answers to the Second Question in the January Issue.

An Excellent Arrangement.

(The Prize Winning Answer.)

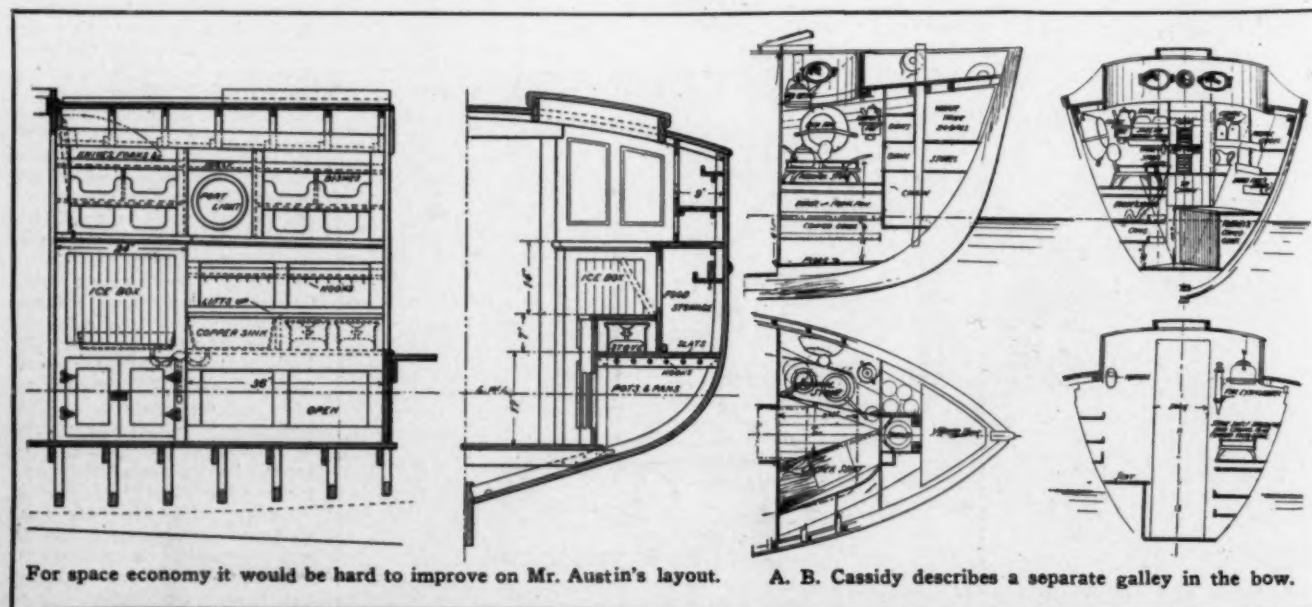
IN arranging the galley and pantry in a small cruiser, it is important that every inch of space be utilized. It is of almost as great importance that it should be sanitary and well ventilated.

The arrangement shown in the drawings is designed for a raised deck cruiser with five feet headroom and occupies five feet of "wall space." If less space is available the same arrangement may be used, omitting the two feet occupied by the icebox, and the shelves and compartments above it.

I do not believe in sheathing over the ribs of the boat. Too much space is wasted and an unventilated air space is formed. First, a frame is constructed to hold a shelf seventeen inches above the floor and as deep as your space will allow. The specific design shown is for a boat of eight feet bottom, and this shelf is twenty-two inches deep. The inner portion of this shelf is solid and forms the bottom of compartments for the stoves and for the sink. The stove compartment should be lined with zinc. Both of these compartments have hinged covers which, when down, form a shelf or working table and keep these parts of the equipment out of sight.

Two separate covers are provided as it is seldom necessary to have both the stoves and the sink uncovered at the same time. The front of the stove compartment may also be hinged if desired so as to make the stove more get-at-able. If a pump is used it may be attached to the after side of the icebox.

Under the stove and sink compartments is an open space for stowing pots, pans, griddles, etc. Hooks should be provided to keep them in place. The bottom of the food storage space is constructed of spaced slats to allow of free circulation of air, and the shelf above it should be bored full of half-inch holes. All parts should be enameled or var-



nished, preferably the latter, so that they may be readily cleaned.

In this particular boat there is a port-light directly over the sink. The companionway is on this side of the boat, and a sliding companion cover over this extends over the stove and gives lots of air and an opportunity for one to stand up while at work.

The details of the icebox are not given as they are outside of the scope of this article. Incidentally, a simply way of forming traps in the drain pipes out of pipe fittings is shown in the drawings.

An amazing amount of shelf room and stowage space is provided in this arrangement. Everything is just where you want it, and there are no damp, musty, closed spaces.

M. AUSTIN, Yonkers, N. Y.

The Galley Forward.

IT is always the best scheme to keep fire as far away from gasoline as possible.

If the motor is located amidships or aft the galley should be well forward, and best of all places, in the bow. In the scheme, here illustrated, head room is provided and at the starboard side, a seat on the locker for stowage of potatoes and canned goods.

The seat is arranged at a convenient height for access to the double alcohol stove on the port side. Below the stove are shelves for the stowage of double boiler and the frying pan.

The tea kettle and coffee pot are hung on hooks, in straps to prevent swinging. Dish lockers are provided at forward side and on starboard side above and outboard of locker seat are shelves for knives, forks and spoons, and package goods. Dishpan is hung on straps outboard of the stove.

The water tank holding twenty gallons, is forward of the bitts and immediately below the deck; it has a pipe and faucet within reach of the cook.

Drain from the faucet and for dumping dirty water is arranged below the faucet, connected through a pipe over board just below the water line.

A chain pipe or wooden trough is arranged to allow for the lead of chain from windlass to the fore peak.

As arranged almost everything is within reach of the cook when seated in front of the stove on the comfortable locker seat.

A hinged scuttle in top of trunk and a port on each side as well as two in front or at forward end of tank that can be opened give good ventilation to the galley.

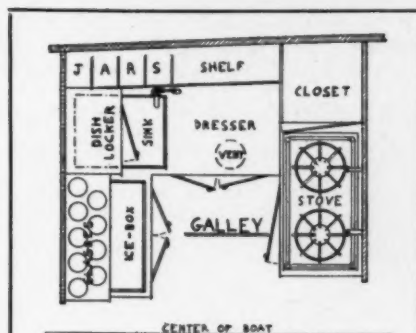
S. B. CASSIDY, Wollaston, Mass.

A Compact Galley

UNDOUBTEDLY the most logical location for the galley and pantry, on a small cruiser, is in the after part of the cabin, on one side of the companionway stairs. Most of the cooking is done when the boat is lying at anchor, with her head to the wind, and the forward ports and companion hatch open. A draught of air, running aft, is then created which draws the disagreeable smoke and odors and most of the heat out of the cabin toward the stern. A cowl ventilator with tunnel pointing aft, placed over the galley, will draw away the heat and odors and keep the air clear when the ports and hatch cannot be opened.

The galley itself should be well equipped for real service. It is best to combine it with the pantry, as every inch of length of the small cruiser must count for the most possible. This can easily be done and still have it only four feet long, as I have shown in the sketch.

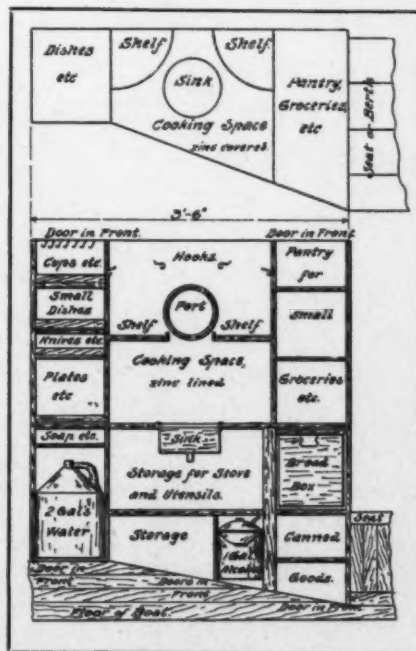
A partition separates the galley from the rest of the cabin. Against this partition is built a cupboard, the top of which should be covered with sheet zinc. The stove, a two burner alcohol or kerosene affair, 22 x 12 x 11 inches high, is screwed fast to this locker. Inside the cupboard are shelves where staple



Plan and profile of galley described by Charles C. Gager.

provisions may be stored. Behind the stove is a closet where tableware and preserves are kept.

To the left of the stove is a table or dresser, with a shelf behind it for holding soap, scrub brushes, and such things, and a place where several jars or bottles may be kept. Next to the dresser is a roomy sink, 15 x 12 x 5 1/2 inches, with a hand pump for drawing fresh water from a tank located elsewhere in the boat. Under the dresser is a large drawer for holding cooking utensils and culinary ar-



B. Brewster utilizes the space beside the engine.

ticles, and another cupboard more spacious than the other one for stowing away more provisions, pots and pans, and other miscellaneous articles.

The large ice-box is situated against the after bulkhead, away from the stove. The top should be flush with the dresser so that it may be used for a table. Cups are best hung in rows from brass hooks screwed into the ceiling beams. Glasses are conveniently held in a rack above the refrigerator. Over the sink, near the ceiling, is fastened a spacious dish locker. A few hooks above the stove will be found useful for hanging cooking pots and frying pans on. The galley floor should be covered with oil-cloth or rubber, as this is more easily kept clean and free from dirt and grease spots than a wooden floor is. Plenty of light is provided for by the large port over the dresser.

This galley arrangement should be suitable for most small cruisers where economy of space is a great factor.

CHARLES C. GAGER, Derby, Conn.

For a 24-Footer.

THE galley problem on a small cruiser is a difficult one at best, but after considering the several locations it will be found to be most desirable to place it just inside the companionway. In the first place, it gives full headroom to work with obtainable in no other part of a small boat. Then, the heat and odors of cooking pass right outside of the boat without leaving the small cabin hot and stuffy.

The drawing shows the plans of galley and pantry of our own cruiser and these will be found to meet the requirements of any small party perfectly. At the same time, it occupies the smallest possible amount of space. This boat is only twenty-four feet overall, which is about as small as any cruiser one comes across.

Under the companionway, a space of three and a half feet forward is occupied. On a larger craft, a corresponding space could be used. The sketch is drawn accurately to scale and tells the whole story better than any written description.

It will be noticed that the cooking space is enclosed on three sides, thus efficiently protecting the stove from drafts and insuring a good working flame at all times. This space is to be lined, sides, back and bottom, with sheet zinc. This can be procured at no cost, of any wholesale dealer in safety matches, for the trouble of carrying it away. (These matches are imported in zinc lined cases.)

The doors are made of 3/4 in. T and G ceiling and shelves, partitions, etc., of 1/2 in. dressed pine. Galvanized wire finishing nails are best to use. This construction is light and at the same time amply strong.

The sink is a feature seldom found on a boat of this size and is usually an expensive part of the equipment. Try this one. Get a gallon refrigerator pan about twelve inches in diameter, take off the handles and cut an inch hole in the center of bottom. Then solder a three-quarter inch gal. sheet metal nipple about three inches long, to under side of pan. Bore a one-inch hole through boats planking, under sink, above water line. Insert a three-quarter inch long galvanized iron nipple in hole and place locknuts inside and out. Cut a hole the size of pan in center of cooking space shelf, and after putting sink in place connect the two nipples with a piece of three-quarter inch rubber hose. You then give it a couple of coats of white bath tub enamel paint and you have, complete, a sink that is simple, efficient and very easily cleaned.

This galley and pantry, together with the icebox described in the December MORON BOATING, make an equipment that is hard to beat. Every feature is taken care of. It gives the maximum of convenience and utility within a minimum amount of space.

B. BREWSTER, Washington, D. C.

Towing the Tender.

How This May Best be Done Both in a Head Sea and in a Following Sea.
With a Number of Good Suggestions for Disposing of It When at Anchor.

THE PRIZE CONTEST—Answers to the First Question in the January Issue.

Use Enough Towing Line.

The Prize Winning Answer.

WHILE it is possible to tow the tender by merely making her fast astern, still there are numerous ways of simplifying and reducing the energy necessary to draw her through the water. Probably the first in importance, and one that is overlooked by many, is the paying out of enough hawser. This statement may be verified by anyone who has noticed the length of hawser used by the numerous tugs engaged in towing up and down the coast. The object of a long hawser is to have the tow far enough astern to be clear of the tug's quick-water, the disturbance caused by the propeller. On the average motor boat experiments have proven that nine fathoms of line will be sufficient; still whenever possible a few more fathoms will facilitate the towing. Fig. I shows another item which is beneficial, especially in a head sea, as it allows the bow of the tender to set higher on the water, offering a better buffer to the head sea, and will keep her drier than if the bow is weighted down by a long hawser.

In towing in a following sea the greatest danger is in having a sea strike her and hurl her against the cruiser, breaking her planking or swamping her. This risk may be lessened by towing off the quarter as shown in Fig. II. In this case the hawser is made fast on the starboard bow of the tender, about two feet abaft the stem and on the port quarter of the cruiser, thus bringing the pressure of the water on the starboard side of the stem and forcing her out of the direct wake of the cruiser, and should be about five fathoms long. It will be noticed in the drawing that the tender is slightly sheered off, and should she be carried forward on a sea she will ride clear of the cruiser instead of striking her.

Fig. III represents the method most generally used while at anchor, although it has been simplified to meet the requirements of a

small boat. The boat boom consists of a piece of spruce 12 ft. by 1½ in., jointed and fitted with a ferrule if desired, having a single sheave block secured at the outboard end, while the inboard end passes through a grommet at the gunwale and the coaming, which should be strengthened at this point by a stout piece of plank about at least 2 feet long, through which the boom would also pass and be secured there with a pin. The tender is fitted with a bridle seized 2 feet abaft the bow, and the bight has a thimble secured in it. The tender is hauled back and forth by a boat halyard rove through the block at the end of the boom and both ends are made fast in the thimble in the bridle. This makes an efficient and simple mode of keeping her clear of the cruiser while at anchor and the boat boom, if required, can be used as a boat hook by the addition of the necessary casting. This boom is easily unshipped, as it only requires the removing of one pin and passing through the grommet, and may be stowed on deck by weaving two grommets through the gunwale.

Another method of securing her while at anchor is shown in Fig. IV, which consists of a 6 ft. by 1 in. spruce pole fitted with snaps so it can readily be attached to the stern of the cruiser and the bow of the tender and two bridles from the gunwales two feet abaft the bow to the outboard quarters of the cruiser's stern. These bridles are also fitted with snaps for ease in attaching.

EWING A. CRAWFORD, Newark, N. J.

Drag in Following Sea.

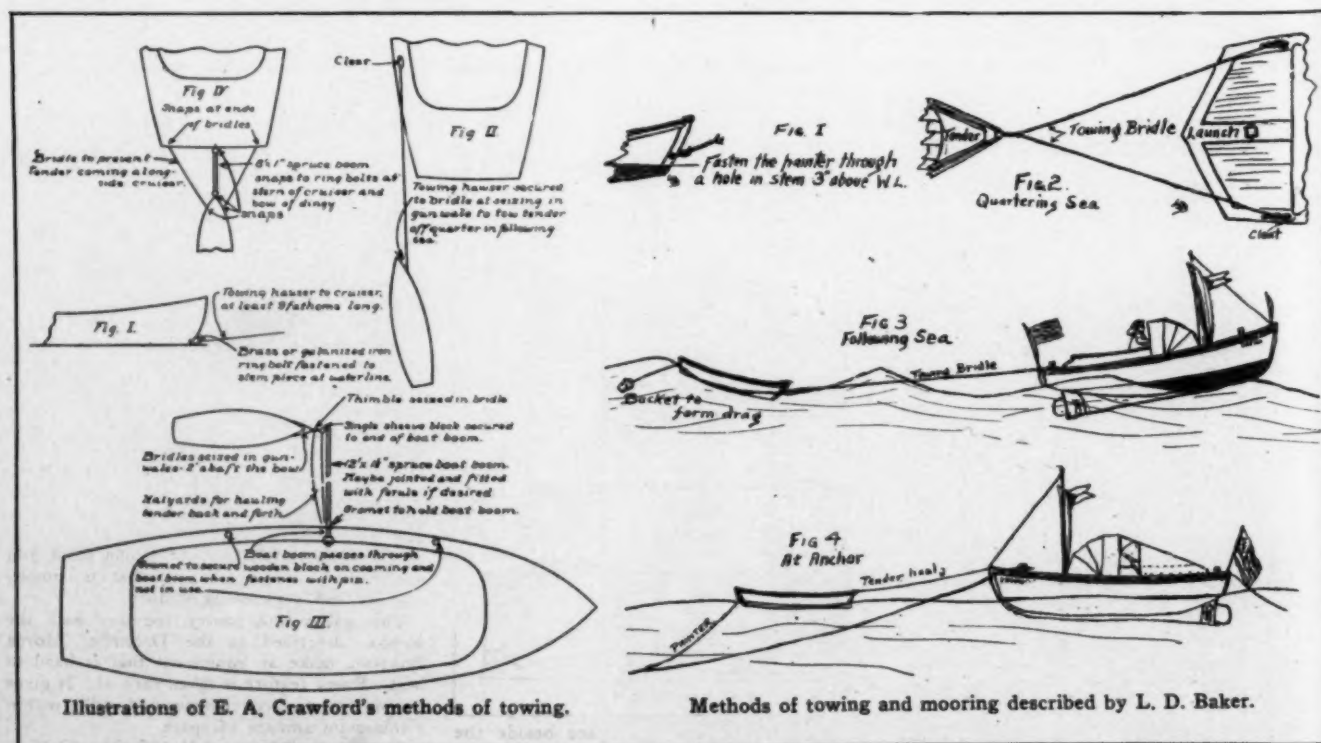
TOWING a tender in a rugged following sea may be accomplished by using a drag behind the tender. The most satisfactory drag for this purpose is an anchor weighing six or eight pounds and costing about one dollar. The ordinary kedge type is good as any, because flukes, shank and stock help in offering resistance. Hang the anchor over the

tender's stern at the end of about two fathoms of small manila line—15 or 18 thread is large enough, and give the tender 25 or 30 feet of scope. The painter between the cruiser and tender ought to be heavy, and of good quality because the springiness of the painter eases the tender when she bangs into a hoary comber.

The drag anchor will prevent the tender shooting ahead and, acting something after fashion of a steering oar, holds the little boat fairly true on its course. If the cruiser is running say nine miles an hour the speed will trail the anchor at an angle and not much more than a fathom beneath the surface. This moderate depth enables the cruiser to cross a bar, or dangerous shoals, without certainty that the anchor will grab bottom. Should a fluke catch, however, the light line will probably part without fetching the cruiser up all standing as an easy mark for pooping breakers.

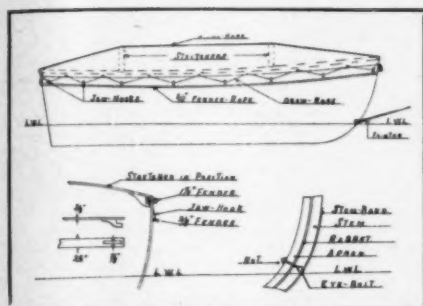
Without the drag the tender would exhibit a tendency to ride ahead abreast the cruiser's quarter. In such position the towing line forms a bight and its weight drags the bow of the small boat toward the line of direction in which the cruiser is heading. This starts the tender on a roving commission so familiar to all who have gone foreign in a rough chance. When employing the drag the tow line is kept fairly taut and has no chance to foul the propeller and put the motor out of business. Of course almost anything will answer as a drag. A gallon can filled with water, a heavy wrench, a bucket or chunk of ballast should do the trick in lieu of the anchor.

When butting into a heavy head sea the tender may be coaxed to tow as submissively as the traditional lamb by stowing weight, say 30 or 40 pounds, under the stern seat, or well aft. Some boatmen carry a bag filled with sand for this purpose. By experiment one may determine just what this weight should be for any model of tender. If the tender has no skeg, the weight must be greater to enable the hull to hold its course. The tow line should



be just the right length to impart to the tender a tendency to stand on its stern with the forward section over the crest of the broad-shouldered wave always to be noted in a cruiser's wake though no two boats create displacement waves exactly alike.

Sometimes it is a good idea to snub the tender close to the cruiser's counter so she will come along with only the midship section and stern immersed. Circumstances, however, frequently defeat this scheme. Be sure to cover the tender with canvas when you set out to do much towing to windward in a lusty blow. Spray is likely to fill and sodden an open hull. Never forget to lash oars to the thwarts or stow them under. Have the oarlocks secure, keep the bailer where it can be



H. B. Vehstedt's canvas cover.

found when wanted, and make doubly sure the tow line has no kinks and can be cast off instantly in emergency.

To prevent a tender from fouling the cruiser while at anchor in shifting tides and varying winds a boat boom is a necessity. This boom, of small diameter and easily made by the veriest amateur, should be several feet longer than the tender. Secure it to the rail amidships with a gooseneck hinge, easily disengaged for stowing, and hold it in position with guys of wire rope. Haul the tender to the outer end of the boom by means of a small line rove through a block with the hauling part leading inboard.

Geo. S. HUDSON, Boston, Mass.

Suggests Canvas Cover.

THE first and prime necessity in towing a tender is a good stout painter—one that you know will not part when the dink is jerking its head off in a seaway. For this purpose 9/16 in. or even 5/8 in. rope is none too heavy. And have enough so that the boat can be allowed to drop back in a big ground swell to where it will not come abroad every time it coasts down one hill while you are trying to climb the next one.

This painter should be made fast to a stout eye-bolt put right through the stem of the tender under the stem band and securely riveted. (See sketch.) You may have to use a nut on the end of the eye-bolt, if the boat is already built, as it would be difficult to rivet this up in the narrow space just back of the stem on most tenders.

To keep the water out of the boat you will need, unless your dink is exceptionally seaworthy, a canvas cover. This should be supported by two stretchers and a ridge rope, as shown in the sketch. The stretchers are simply pieces of straight grained oak 3/4 in. thick by 2 1/2 in. wide, with jaws to fit the gunwale, as shown, sprung into place. Wood is preferred for these stretchers, as when not in use it will straighten out and the stretcher will roll up in the cover without making a bulky package.

The cover should be made of 8-oz. canvas and have a row of grommets worked into its lower edge. A quarter-inch braided cotton rope is led through these, bringing both ends to the bow. In addition to the large fender with which all tenders should be fitted, there should be another of 3/4-inch rope at about the lower edge of the sheer strake. Above this small fender a number of small brass jaw hooks made of 3/16 x 3/4 in. brass 2 inches long

should be fastened, one between each pair of grommets in the cover, so that there will be a space of about 3/16 in. between the tip of the jaw and the rope. (See sketch.)

After putting the two stretchers in place, stretch the ridge rope as tightly as possible and put on canvas cover. The draw-rope in the grommets is now forced under the jaws and held in place by the 3/4-inch fender-rope until the bow is reached, when the draw-rope is pulled up and tied at that point. This will pull the canvas into place all around and make it bear hard on the 1/4-inch fender, making a tight joint at the gunwale. The small fender will prevent the jaw-hooks from scatching the yacht.

To prevent the dink from coming aboard when at anchor in a current, an 18-foot spruce pole, 2 inches in diameter, is carried on the cabin top. This pole has a boat hook fitted on one end, and is very useful at times in making landings. But its real object in life is to be lashed to the stern bitts and chock with about 13 or 14 feet hanging over the stern. The dink is made fast to the out-board end of the pole with very little scope, and being but 10 feet long cannot touch the yacht. After making the painter fast to the end of the pole always bring the end aboard and make fast to the bitts. The pole might break some chilly night.

H. B. VEHSTEDT, Racine, Wis.

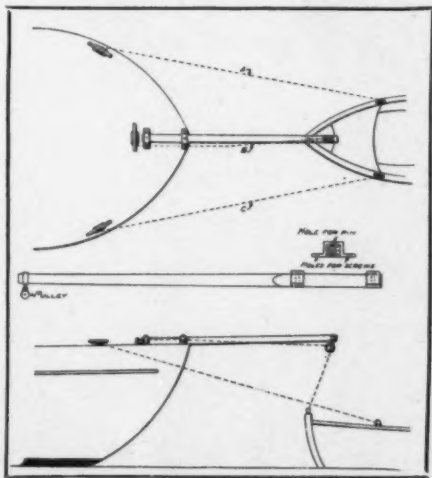
With Single Spar.

ILLUSTRATION shows a method of towing tender at all times. A piece of 2 or 2 1/2 inch square, straight-grained wood is obtained, of a length varying with the free-board at stern.

A 3 or 4 foot overhang should be sufficient. This overhanging part should be turned round, for appearance sake, the balance remaining square, so as to ship into cleats or straps on the deck, spaced about 12 in. to 18 in. apart. The greatest distance possible should be used.

These straps (as illustrated) are made of 3/4 x 2 in. iron, with holes in base for fastening to deck; and with a hole in the top which coincides with a hole in the rod of wood. By placing a pin in these holes, the rod is secured, yet it can be easily removed. To the outer end of the rod, a pulley is fastened as shown.

Three cleats are required on the deck of the cruiser, of such a length that the bow of



L. R. K.'s single spar method of towing.

tender is about one foot inside the pulley on the rod. These ropes should be of the same length. Then rope B is drawn up and fastened. (It will be noticed that rope B goes from ring in bow of tender, through pulley and then to cruiser.)

This method is quite flexible in rough weather and keeps tender away from cruiser at all times, yet by simply loosening Rope B tender can be pulled in by Rope A or C.

For convenience, rope should fasten to rings on the tender with snap hooks.

The strain of towing will be on Ropes A

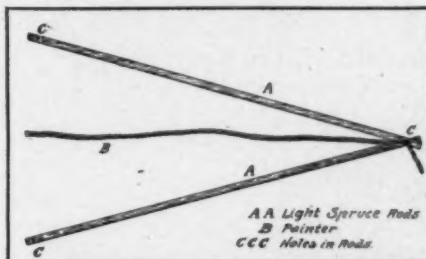
and C. Rope B simply keeps the tender away from the cruiser by means of the wood rod.

L. R. K., Philadelphia, Pa.

Uses Two Spruce Rods.

THE accompanying sketch shows a simple device that very nearly if not entirely solves the problem of towing the dinghy. Actual use has shown that this is practical and can be used in any sea in which such a craft can be towed.

Referring to drawing, A.A are two light spruce rods, with half inch holes, C.C.C. bored about three inches from each end. The painter goes through the two holes at the closed end and from there to sampson post or cleat. A



The shears employed by B. Brewster.

light line attaches each of the other ends to the two stern chocks. This is all there is to it.

This arrangement, being flexible, will tow the dinghy better than the painter alone; in a following sea it will prevent its jamming up against the stern or alongside; in a head sea it will tow the little craft straight and true, preventing the disagreeable yawing from side to side.

B. BREWSTER, Washington, D. C.

Several Cases Considered.

TAKING care of the tender of a small power boat resolves itself into five principal conditions:

- First. Ordinary towing.
- Second. Towing in heavy head sea.
- Third. Towing in heavy quartering sea.
- Fourth. Towing in a following sea.
- Fifth. Disposing of the tender when at anchor so that it will not bump the boat.

First. For all towing make the painter fast to the stem about three inches above the water line (a hole in stern flanged with lead works fine. See Fig. 1). This lifts the bow of the tender, makes it tow easier, prevents it rooting, and filling, and as the point of bearing on the water is thrown aft, it tows straighter. Also place weights in stern. For smooth water tow on the after side of the second or third stern wave of launch.

Second. In heavy head seas I find it best to tow fairly close, so as to have both boat and tender on the same swell if possible, using either single painter or bridle shown in Fig. 2.

Third. In quartering seas I tow about twenty feet from stern, using bridle shown in Fig. 2, which is merely two painters of equal length fastened from the stern of tender to two cleats, one on each side of after deck. It helps to keep the boat from slewing around and shipping water. At times I have had to use the bucket drag shown in Fig. 3 to hold the tender away from launch.

Fourth. Hardest of all is towing in a heavy following sea, without the tender bumping the stern. Tow with bridle, about 25 feet away, and fasten a small bucket (tie to handle) by about six feet of rope to the stern of tender for a drag. I have run twenty miles on the open sea, in a heavy following sea, and had a constant pull on the bridle ropes at all times, and a dry tender at the end.

Fifth. To dispose of tender at anchor I tie the painter to the anchor line (see Fig. 4) about 25 feet from boat, another line from stern of tender to launch, to pull in with, and the tender rides in front, and away from the boat in all winds and tides.

LEO D. BAKER, Avalon, Catalina Isle, Cal.

New Things for Motor Boatmen.

New Attachments and Accessories That Are Offered to the Man With a Boat.
The Month's Production of Devices Designed as Aids to Motor Boating.

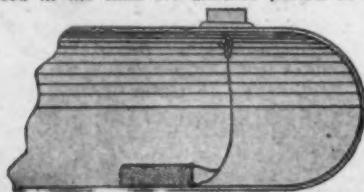
[Under this heading will appear each month descriptions and, whenever possible, illustrations of the various devices designed to add to the pleasure and comfort of motor boating which have been brought out since the previous issue. It should be kept in mind that the department in any one issue is, as it were, only one month's instalment of the many useful things on the market, and that it will be well to consult the previous issues of MOTOR BOATING which will form, together, a very complete illustrated directory of the things the motor boatman needs. —In writing the makers of the articles shown, if our readers will mention MOTOR BOATING they will receive special attention.]

The Grisco Self Starter.

The Ignition Starter Company, Grand Rapids, Mich. This device, while not connected with any moving part of the motor, is designed to automatically start the motor regardless of weather conditions or the length of time it has remained idle. The starter consists of a compressor, a series of selectors, one for each cylinder, a push rod and the necessary connections. The whole outfit may be attached in a few moments, the selectors fitting into the openings usually supplied for relief cocks in the cylinders. The compressor is a combined air pump, carbureter and gasoline holder, made of polished brass. It is about two inches in diameter and eight inches long, and may be placed in any position convenient to the operator of the boat. Enough gasoline is contained in this to start the motor about 150 times. When the selector valves are opened by means of the push rod, extending through the bulkhead, an explosive mixture may be forced into the cylinders by one double stroke of the compressor, the up stroke drawing air through a series of small holes surrounding the gasoline jet, and the down stroke forcing the vaporized gasoline to the selector valves which distribute it to the cylinders. The only motion required is the movement of the valve levers and the result accomplished is the same as from spinning the motor and drawing in a charge through the carbureter. The complete device weighs only six pounds and may be used on either two or four-cycle motors. The prices range from \$50 for a two-cylinder outfit to \$100 for the eight-cylinder type.

Cresco Water Absorbent Tube.

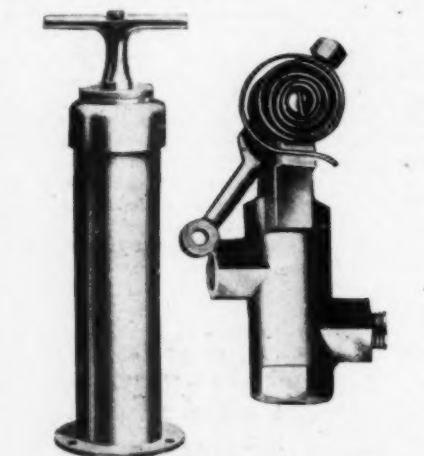
The Cresco Laboratory, New Haven, Conn. The Cresco Tube is a perforated metal case, designed to be carried in the gasoline tank for the purpose of absorbing any water which may find its way into the tank, and disposing of it before reaching the carbureter. The tube is 2½ inches long by 1 inch in diameter, and possesses by reason of a substance compressed into it, the peculiar property of attracting and absorbing water when immersed in other liquids, without being in the least saturated or affected by such liquids. This tube is said to have a capacity to absorb and contain about six ounces of water, which is a greater amount than would usually accumulate in a fair-sized tank in from four to six months. The makers recommend that this tube be taken out of the tank and dried in a moderately hot oven for about fifteen minutes, about once in three months, this procedure drying out all of the water that has collected in the tube and rendering it just as good as new. It may then be placed in the tank for another period of absorption.



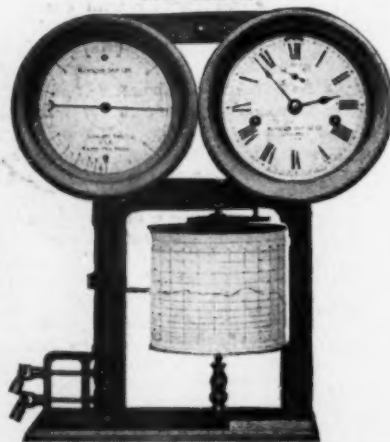
The Cresco Tube in position in the gasoline tank.



The Stewart Gas Saver.



Compressor and selector valve of the Grisco Self Starter.



The Nicholson Speed Indicator.

In position the tube is dropped into the gasoline tank, fastening the end of the wire to which it is connected to the bottom of the filler cap or to some other convenient place so that the tube may be easily recovered from the bottom of the tank when desired. The tube retails at \$1.00.

The Stewart Gas Saver.

The Alfred C. Stewart Machine Works, Los Angeles, Cal. The manufacturers of the Stewart Precision Carbureter have marketed a little device to be used in connection with their or any other carbureter, called the "gas saver," which is a manually controlled valve for admitting auxiliary air above the carbureter. When the valve is opened the air enters around the entire circumference in a thin, flat jet, and, striking the gasoline mixture at right angles, renders the mixture more nearly homogeneous, and correctly proportions it for developing the greatest amount of power. A mixture of air and gasoline, to develop the maximum power under heavy loads, in the gasoline engine, must be far richer than is necessary for light loads where comparatively little power is required. This device is designed to enable the carbureter mixture to be instantly regulated to the correct proportions for various conditions of service, as when towing or running into a heavy sea. It is clamped between the carbureter and the intake manifold of the motor and is operated by a small lever placed near the steersman's foot. The gas saver sells from \$5 up, according to the size.

Nicholson Speed Indicator.

The Nicholson Ship Log Company, Cleveland, Ohio. This indicator is designed, not for large sea-going yachts, but for the great number of craft under 40 feet in length, and has been manufactured so that it may be sold at a price within reach of anyone owning such a boat. The great advantage in this instrument lies in the fact that it enables one to know at any time just how fast his boat is going. It also permits regulating the engine, since direct and accurate results can be seen on a plainly calibrated, watch-face indicator. Again, in the case of a reversible propeller, it shows by its speed results the most advantageous pitch at which to set the blades. It is claimed that this instrument is so sensitive that it will show accurately the exact amount of speed lost by a head wind or by poor steering. In connection with the plain instrument the company are making an equipment which contains a ship's clock, the indicator and a recording chart. The principle upon which it works is an intake tube on the bottom of the boat which connects with a cylinder containing a float, which in turn is connected to the indicator. This float rises and falls with the variations in speed of the boat.

The Leece-Neville Generator Dynamo.

The Leece-Neville Company, Cleveland, Ohio. This lighting and ignition generator, especially designed for boat service, is of the direct current type and is designed to furnish 150 candle power, at a normal speed of 1,200 r.p.m. The current so generated is stored in storage batteries and is used for both ignition and lighting, or for lighting alone, when the engine is not running, or when it is running at a speed below that required by the dynamo to generate current. In the use of the storage battery feature, a uniform strength of current is assured, whereas with a dynamo alone, the variations in the engine speeds would naturally cause similar variations in the strength of the current. The generator is made of annealed electric sheet, is very compact in form, and may be set or mounted equally well on either of its four sides. Four small legs which are attached to the corner studs on the generator are furnished to facilitate the mounting. Another feature of this generator is its unusually quiet running.



The Leece-Neville Generator Dynamo.

Forbes Swirling Muffler.

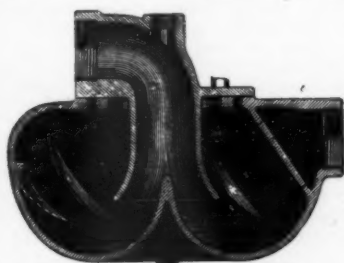
Marine Devices Company, Boston, Mass. The muffler illustrated herewith is the invention of a practical gas engineer who saw the need of a compact muffler which would cool and silence the exhaust gas of the gasoline engine without cutting down the horsepower. It embodies a combination of three different methods of cooling the gases. First, the exhaust water from the engine is introduced into the middle of the exhaust charge just as it enters the muffler. The gases then strike into the reservoir of water in the lower bowl and cause this water to be distributed throughout the interior of the muffler in the form of spray. A deflector plate placed inside of the exhaust opening imparts a swirling motion to the gases, and this is aided by oblique ribs placed at frequent intervals on the inside of the bowl. These ribs also serve a further purpose of retaining a certain amount of water, which aids in the cooling process. This muffler is made in two parts, the bowl and the inlet pipe or bell. The exhaust pipe leading from the engine is fastened into the inlet and the bowl of the muffler may be fastened in such a position as to allow the outward exhaust pipe to be carried away in a straight line at any angle up to 45 degrees from the inlet. The muffler is made in five sizes, ranging in price from \$7.50 to \$12.50. A. S. Morss & Co., 210 Commercial St., Boston, are selling agents for this muffler.

Buckley Automatic Flag-Pole and Non-Tangle Device.

The Buckley Automatic Flag Pole Co., Inc., 42 Court St., Boston, Mass. This new invention is designed to prevent flags, banners and signals from becoming entangled or torn on halyards or poles. It carries from one to six sets of sheaves for the halyards on a weather-proof, rotating, ball-bearing truck on a weather-proof cap at the top of the pole. At the lower part of the pole is a revolving cleat ring operated by a wind vane, with cleats to correspond with the number of sheaves in the truck at the top of the pole. Not only with this device is it possible to keep one flag flying freely, but as many as desired. There is no chance of fouling one with the other or with the staff or halyards. The rotating truck can be attached, inverted to the signal yards on towboats, ships, etc., and the vane cleat-ring can be attached to a column about six feet in height from the base on the bridge deck or other station. It is not necessary to have the vane cleat-ring plumb with the rotating truck, and the position of the column can be changed to make room in confined areas. The halyards will work effectively at all angles, swinging around and over the cleat-ring.



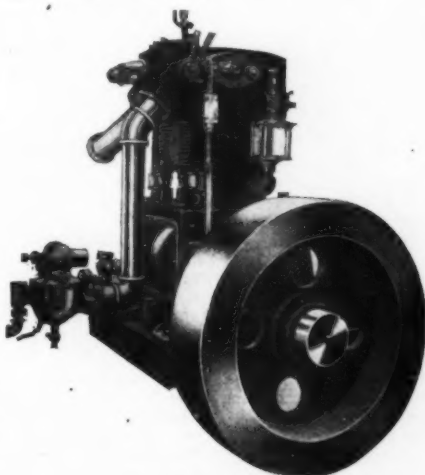
The Culver-Stearns Electric Side Light.



The Forbes Swirling Muffler.

The C-S Motor Boat Lighting Equipment.

The Culver-Stearns Mfg. Co., Worcester, Mass. The search light belonging to this equipment is very small and compact and was designed to meet the demands for a lamp for use on small boats that would be effective and cost only a moderate amount and that would not have the clumsy effect produced by a large lamp on a small boat. The reflector is most powerful, being a true parabola, every particle of light possible being projected straight ahead and in parallel lines. The distinctive feature about this model is the method of making electrical connection. The plug in the standard fits into the connector mounted in the deck plate. The act of removing the standard disconnects the circuit and when the cap is screwed to the deck plate no exposed wires or connectors are left. The company in connection with this equipment also manufactures side lights, such as shown in the accompanying illustration. These are very neat in appearance and are somewhat similar to the search light just described. Completing the equipment is the holophane dome lamp and the Culver-Stearns special lighting battery.



The Fadum Motor.

Hickok Nameplates.

Hickok Mfg. Co., Rochester, N. Y. This company is manufacturing a complete line of nameplates, initials and figures for yachts, motor boats, sailboats or canoes. These are made in either strips with any style of letters, or special design. The plates are made of heavy polished brass, solid German silver, and nickel plated and are made in a very large number of stock designs. These are also made to order in any style according to the option of the purchaser at a very large range of prices.

The North East Gas Engine Starter.

The North East Electric Company, Rochester, N. Y. This semi-automatic starter consists of a special hand pump and a positive type of selector valve interconnected by a small copper gasoline pipe from the gasoline tank to the pump, and from the pump to the selector valve and with four small pipes from the selector to the several cylinders of the engine. The pump is of a special design which embodies an air pump and a gasoline mixer, and is mounted in any position which is convenient to the operator. Its purpose is to mix gasoline and air and to force such mixture into the selected cylinders. The selector consists of a rotary valve which is usually mounted on the timer shaft, and its purpose is to select ports which communicate through tubes to the proper cylinders. This valve, it is claimed, automatically compensates for any wearing of its various parts.

The Fadum Motor.

This motor is manufactured by Frederick Fadum & Son, of Baltimore, Md. The type shown herewith develops 6 to 7 h.p. in the single cylinder design and is equipped with

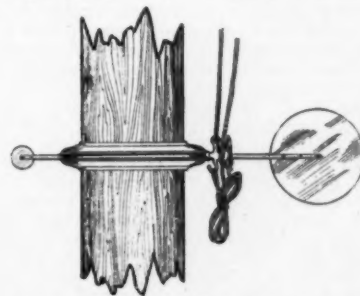
make-and-break spark. These motors are made in 1, 2, 3 and 4-cylinder designs developing from 4 to 30 h.p.; six-cylinder engines are built to order. The manufacturers make but the four-cycle type, the larger models being furnished with jump or make-and-break spark and clutch. A Schebler carburetor is used and the water pump is of the plunger type. Means are provided for changing the time of the spark on either the jump or make-and-break systems.

Outfit A consists of the motor with Schebler carburetor, spark coil, muffler, oil and grease cups, priming cups, relief cocks, ball thrust bearing, flange shaft coupling, timer, spark plugs, switch, batteries, wire and plunger pump. Outfit B includes a reversible blade propeller and outfit C includes a solid bronze propeller with reverse gear.

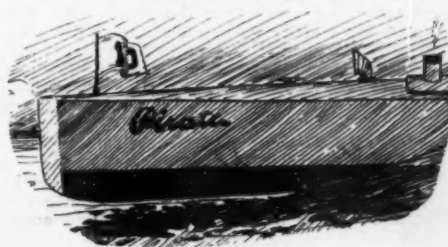
Connecticut Synchronous Signal Igniter.

The Connecticut Telephone and Electric Co., Meriden, Conn. Among new things in the ignition line is the synchronous signal igniter, combining all the essentials of an ignition system which may be used independently or as an auxiliary to a magneto. It comprises a combined circuit breaker and secondary distributor, a transformer coil with starting vibrator and signal lamp, and a steering wheel switch or combination battery and magneto switch. The circuit breaker and distributor is designed for operation from the cam shaft. The driving shaft, which is provided with a hole for attaching to the engine shaft, revolves on imported ball bearings and the cam for actuating the circuit breaker is composed of hard steel pins set lengthwise equidistant into this shaft, which, upon revolving, strike the roller of the breaker arm in succession, thereby making and breaking the circuit successively. The breaker mechanism is very simple and effective. It is composed of a very light steel lever pivoted upon a steel stud and provided with a bone fibre roller and a large platinum iridium contact which is held against an adjustable platinum iridium contact screw by a steel spring. The contact screw is insulated from the body of the instrument by a brass faced fibre block and may be adjusted from the outside by sliding the circular bronze spring away from the opening containing the screw, when a small screw driver may be inserted and the adjustment made. The sliding of this spring also uncovers a slot through which a small file, furnished with the outfit, may be inserted and both contacts tuned up if they should become roughened.

The distributor arm is fastened by sliding key to the shaft and contact with the distributor blocks and coil terminals is made by carbon brushes. The cap forming the upper part of the apparatus is composed of a highly insulating material, and the bronze contact blocks are molded in this cap and are provided with terminals for connection to the spark plugs and transformer coil.



Buckley Automatic Flag Pole and Non-Tangle Device.



A Hickok Name Plate.

The New York Motor Boat Show.

Generator Valve Co., Brooklyn, N. Y. This company will have on exhibition a very complete line of their carbureters which are of the float feed type, together with a number of their generator valves and check valves. Besides these there will be a number of air whistle outfits on display and various practical demonstrations of the several products will lend interest to the booth.

The Regal Gasoline Engine Company, Cold Water, Mich., expect to exhibit a full line of four-cycle marine engines. The high speed engines range in size from a three h.p. single cylinder to a 24 h.p. four cylinder, while the heavy duty engines range in size from 5 h.p. single cylinder to 45 h.p. four cylinder. All of the two and four cylinder types have reverse gears built into the extended engine base and are equipped with a special type of mechanical force feed lubricator. The heavy duty line of engines have an option as to ignition, either jump spark or make-and-break being furnished.

The Scripps Motor Co., Detroit, Mich., will exhibit 8 distinct sizes of their well-known motors including their two single cylinder types of 4½ and 6 h.p. respectively; and 9 to 13 h.p. and 12 to 18 h.p. two-cylinder models; 18-30 h.p. and the 24-48 h.p. four-cylinder and the 27-45 h.p. and 48-72 h.p. six cylinder motors. In design Scripps motors follow closely with the accepted practice in four-cycle construction, presenting no radical or untried features. The 1911 models contain a few new features including a specially designed reverse gear carried on an extension base resulting in a perfect alignment of all shaft bearings. The new exhaust manifold is water jacketed relieving all expansion strains. The ignition of the four and six-cylinder models is accomplished by means of the Delco distributor system, and a Bosch high tension magneto, all high tension wires being neatly installed at the factory.

The Tygard Engine Co., Pittsburg, Pa. This company have made arrangements with the management of the show to exhibit their positive expansion, reversible steam engine running under power from steam supplied from the boilers of the building. The engine will be shown hanging suspended from a chain, coupled to a short shaft by means of Spicer universal joint. A short shaft will be fastened to a support on the floor and will carry a propeller at its outer end. The live steam and exhaust connections with the engine are flexible and the engine will hang absolutely suspended from a single chain. The remarkable feature of this engine is in the fact that the 40 h.p. size shown weighs complete 200 lbs. and is about the size of a small beer keg. It contains only four moving parts and these all revolve. There is no reciprocation whatever in any part of the engine. This is a variable cut-off valve engine without any dead centers and will be shown running, it is claimed, without vibration at speeds ranging at 10 to 5,000 r.p.m.

The H. C. Doman Co., Oshkosh, Wis. This company's exhibit will include their entire 1911 line of the four cylinder type, comprising the four cylinder 12 h.p. engine, having a 4-inch bore and a 5-inch stroke. The four cylinder 20 h.p. motor having a 5-inch bore and 6-inch stroke, four cylinder 30 h.p. having a 6-inch bore and a 6-inch stroke. The feature of the exhibit will be the new four cylinder 40 h.p. heavy duty motor, having a 7-inch bore and a 9-inch stroke. This is an extremely powerful motor adapted for cruising and work boat purposes. It is equipped with a magneto and has a governor for controlling the speed. An air pump for whistle purposes, mechanically operated valves, adjustable push rods, force feed lubrication, and many other up-to-date features complete its equipment. Besides the type mentioned it will be built in three other sizes, 20 h.p. two cylinder, 30 h.p. three cylinder, 60 h.p. six cylinder, developing these horsepower at 350 r.p.m.

The Stanley Company, Boston, Mass., will show their line of motors ranging from 3 to 15 h.p. These motors are of the two port

Continued from page 29.

two-cycle type. They are manufactured in 3, 5, 7½ h.p. single cylinders, and in 6, 7, 10, 14 and 15 h.p. two-cylinder models. Double cylinder motors in sizes 7 and 14 h.p. have the jump spark ignition. All the other sizes are equipped with the make-and-break type. In design they are adapted for both pleasure and working boats. The three single cylinder sizes are more especially of the heavy duty model than the five double cylinder sizes, although all of the sizes are strong and compact with every wearing surface of ample size, with large ports in relatively correct positions. The commutator used for the jump spark is of the rotary type and so constructed that it will run perfectly true at all speeds.

The Bayonne Launch Co., Bayonne, N. J. An exceptional type of boat is being built by this company for the Standard Oil Co. The dimensions of this boat are: 41 ft. over all, 9 ft. 6 in. beam, and a draft of 34 inches. She has very good lines, as the accompanying sketch shows. At the bow, she has a flush deck. Then a glass cabin having a clear head-room of 6 ft. 3 in. Both sides of the cabin are provided with comfortable seats. Amidship is the engine room, on the one side of which is a toilet and locker; on the other side is a seat which may be of use when the boat is crowded. The engine room is separated from the forward cabin by a swinging door. Aft she is provided with a goodly sized cockpit, with seats on sides and astern. The boat is provided with a 12 horse power Standard engine, which will produce a speed of 9 to ten miles an hour. She is controlled by a steering gear, an engine control forward in the cabin and aft in the cockpit. The boat is to be put to various uses, and is built for heavy duty.

Mercury Motor Co., New York City. This company will exhibit a representative line of their engines, including the following: a six horse power, single cylinder, a 14 h. p. double cylinder, three four cylinder motors of 25, 40 and 60 h. p., respectively. In addition to this will be shown a 100 h. p. six cylinder engine and for the first time their new 200 h. p. V-type motor. This latter motor weighs 450 lbs. and will be known as the Defender. A display will also be made of the cups won by the noted boat Gunfire II.

Wilmarth & Morman Co., Grand Rapids, Mich., intend to show a large stock of their speed wheels and propellers as well as exhibiting at the Show one of their Sintz reversing speed wheels, and several of the regular type. The fact that the company claims that none of the well known solid speed wheels have ever succeeded in equalling the speed of this company's reversing speed wheels will undoubtedly cause considerable interest in the exhibit. The display will be in charge of C. E. Meech and Harold W. Browne, cashier and eastern representative of the above company respectively.

August Mietz, New York City. This company will exhibit a representative line of their marine oil engines. In the construction of these engines they have followed the same general principles of their Standard Stationary Engines. They are of excellent design, and are constructed from high grade material and with superior workmanship. The castings are of close grained gray iron, the crank shafts are steel forgings, and all the bearings are of excellent quality of bearing metal. The cylinders are symmetrical and the internal dimensions and areas are the result of years of practical experience and are properly proportioned to obtain the greatest efficiency. The pistons are of the trunk pattern, fitted with cast-iron packing rings accurately turned and milled. These engines are operated on common kerosene oil, fuel oil, gas oil, distillate or crude oil of suitable or alcohol.

S. E. Aaron, Engine Company, Boston, Mass. Mr. Aaron will exhibit the Aaron Automatic Bilge Pump. It is his intention to show an engine in operation with

one of these pumps connected with the water circulating and discharge drawing up the bilge water, oil and above all the gasoline fumes that lay in the bottom of the boat. It is claimed that this pump will positively pull out the fumes and discharge them overboard. One of its features is its simplicity of installation. It is connected to the outlet of the circulating cooling system on any gasoline engine. This can be done by anyone and requires no mechanical ability. There is a petcock on the bottom of the pump to which a hose may be attached and used for washing the boat. These pumps are made for use on engines of from 2½ h. p. up.

Schiffelin & Company, New York City. This company expects to demonstrate the "Steero" Bouillon Cubes made by the American Kitchen Products Company, New York. These cubes are made of highly concentrated extract of beef and vegetables, seasoned and ready to serve, when dissolved in boiling water. They are carefully wrapped in wax paper and protected by tin foil, being packed finally in tin boxes. Each cube makes a cup of delicious bouillon. Because of the ease with which they may be carried about, and because of the small space occupied, and the simplicity of their preparation, they are exceptionally well adapted for use on board.

Mianus Motor Works, Mianus, Conn. The following two-cycle engines will be exhibited: 3, 5, 7½ and 10 h.p.; single cylinder, 6, 10, 15 and 20 h.p. double cylinder and the 30 h.p. triple cylinder. The Mianus is a moderate speed motor averaging from 400 to 600 r.p.m., therefore it is well adapted for all kinds of boats except very narrow speed boats. It is not a light weight motor and yet is not heavy enough to be clumsy, the five horse-power size weighing about 300 pounds. It is a two-cycle, two port motor with make-and-break ignition. The Mianus people offer several equipments including low tension magneto geared direct to the motor; mechanical belt driven oiler or a combination of the two. It is a reversible engine running in either direction as long as desired.

Fairbanks Company, New York City, will show a representative line of their Victor gasoline marine engines. These engines are designed for medium weight boats, that is to say, boats designed for cruising and pleasure, using medium sized propellers, turning 350 to 600 r.p.m. Since a large percentage of the boats used come under this class, these engines are built to meet the demands of the majority. The Victor is of the two-cycle two port type built in the following single cylinder sizes, 1½, 3, 4, 5, 7, 10 and in the double cylinder sizes, 9, 11 and 15 h.p. Ignition is of the make-and-break type, the igniter plug, excepting that on the 1½ h.p. is the same on all of the engines.

Tuttle Motor Company, Canastota, N. Y., will display a representative line of their marine engines including single, double and triple motors of different sizes. On one of the 10 h.p. two-cylinder sizes will be shown a high tension magneto and any of these engines will be so equipped with this ignition system at an added cost. In addition to the above there will be a two-cylinder 2 h.p. and a four-cylinder 4 h.p. special models with rotary intake valve and double exhaust, double transfer port, all of which go to make a two-cylinder motor more positive and economical.

Apple Electric Company, Dayton, O. Among the features composing the "Apco" motor-boat lighting systems are the following: The "Apco" dynamo, motor boat switch-board, searchlight, running lights, storage battery, extension hand lamp, cabin dome light, oil lamp adapter and meter lamp. The "Apco" motor boat dynamo is made in three sizes for the three general systems carried in stock for boats from 16 to 65 ft. in length. The No. 1 size for boats 16 to 25 ft. in length is equipped with the "Apco" governed friction drive and is designed in connection with the other apparatus composing the system to supply the regular running lights and the ignition spark for the engine. The No. 2 and

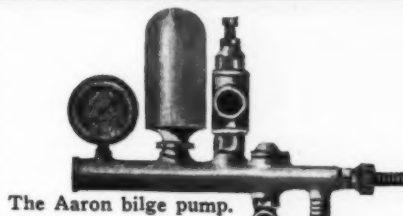
No. 3 sizes are equipped with adjustable spring bases so that either friction or belt drive may be employed. The hand wheel adjustment enables the operator to throw the dynamo in or out of contact with the engine fly wheel at will, if friction drive is used, and serves as an ideal belt tightener, when belt drive is employed. In addition, the No. 3 system is equipped with high grade imported ball bearings. The motor boat switchboard consists of a volt-ammeter, automatic cut-out panel, push button switch for controlling all lights and ignition current, fuses, pilot lamps, etc. The "Aplco" searchlight follows in general design the well-known automobile electric head lights, being equipped with silver parabolic reflector and white Tungsten bulb with spiral cord filament, thus enabling the operator to accurately focus the lamp.

Carlisle & Finch Co., Cincinnati, O. This company's exhibit will be shown in that of the Clifton Motor Works and will consist of one No. 1 direct connected generator set, 7 and 9 in. projector searchlights, a 12 in. searchlight, a 14 in. searchlight, and several other specialties, such as the friction-driven launch dynamo. One noticeable feature in these searchlights is the carbon feeding mechanism. The carbon carriers are supported on two parallel brass rods and they move towards each other by means of a right and left screw. This screw is actuated by a shunt magnet and the length of the arc is maintained absolutely uniform, no matter in what position the mechanism is placed. All parts of the mechanism are below the metal shield, and the slender carbon holders are the only parts which are in the line of the light.

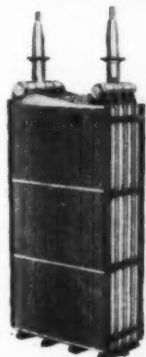
C. D. Durkee & Co., New York City, will have a display comprising a full line of marine hardware, both galvanized and brass, comprising many new and special features that have recently been manufactured, including special steering devices with gears (by which one man controls both the steering and the engine), telegraphs, etc. There will also be a full line of marine plumbing, special yacht rigging, a line of copper and yacht paints; all kinds of mooring tackle for boats and a special new log. The Fanning & Farrell whistle for motor boats, and the Andrade "Viking" windlasses, something entirely new, will complete the exhibit. The company promises to have an office with typewriter and stenographer and all the necessary office equipment, in order to enable their customers to write their letters and receive mail at their booth.

Dayton Engineering Laboratories Company, Dayton, O., will exhibit the "Delco" distributor used as standard equipment for 1911 on the Cadillac cars as well as on some of the Scripps Marine Motors. One very remarkable point in connection with this apparatus is the extremely long mileage that is claimed for it. The makers claim that under ordinary conditions the motorist is able to obtain 1,000 miles from one set of dry cells, using the distributor. This distributor using but one coil and having no moving wires is especially designed for speed work. The relay or circuit breaker, which is a feature of all "Delco" apparatus, is used in this product, as is the unique switch with its self-starting device. A practical demonstration of this apparatus will be given.

The Edison Storage Battery Co., Orange, N. J., will display batteries for yacht lighting purposes, electric launch propulsion and ignition service. These lighting batteries will be shown in operation at the show, in connection with a switchboard and generating outfit supplied by the Smith-Meeker Engineering Co., 123 Liberty St., New York City. The new Edison Storage Battery is known as type A. It is at present made in three sizes. A cell having four positive plates is called A-4, a cell having six, A-6, a cell having eight, A-8. The Edison invention involves the use of an entirely new voltaic combination, an alkaline electrolyte is used in place of the usual lead-peroxide combination and acid electrolyte characteristic of all other commercial storage batteries. This new combination, it is claimed, secures greater durability and greater output per given weight of battery, and eliminates a long list of troubles and diseases inherent in the lead-acid combination which have hitherto hindered the full appli-



The Aaron bilge pump.



Plates from the New Edison battery.



The Maco carburetor, sectional view.



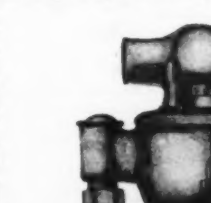
Pfanstiehl Junior.



The Apico dome lamp.



Electric Storage Battery Co.'s searchlight.



Carlisle & Finch projector.



Michigan speed wheel.

Monarch Standard carburetor.

Monarch Standard carburetor.

cation of the original storage battery idea. In the Edison Battery the active materials are oxides of nickel and of iron, respectively, in the positive and negative electrodes, the electrolyte being a solution of caustic potassium in water. The retaining cans are made of sheet steel welded at the seams by the auto-genious method, making leakage or breakage by severe vibration practically impossible. The walls of the can are corrugated so as to give the greatest amount of strength with a minimum of weight.

Electric Storage Battery Co., Philadelphia, Pa., will have on exhibition sparking batteries and lighting equipments, consisting of generators, switchboards and lamps for lighting launches and yacht lighting equipments consisting of engines, generators, batteries, etc., together with materials and sundries used in connection with the above apparatus. The searchlights used in these equipments are finished in brass and are made in three sizes. They are of rigid construction and water proof being especially adapted for marine service. The 6 and 7 in. sizes are equipped with a 10 candle power, six-volt Tungsten lamp, and the 8 in. size is equipped with 16 candle-power, six-volt Tungsten lamp. All the searchlights are fitted for "Ediswan" base lamps of the "Mazda" type. All are equipped with an adjustable focus parabola reflector and are furnished with a connector fitted into the body of the lamp, or with a 10 inch cord having a connector attached.

Motor Appliance Co. of America, New York City. The chief feature of this company's display will be the "Maco" carburetor. It has been the object of the manufacturer to place on the market a carburetor embodying all the essential features for perfect carburetion with the least possible amount of adjustment, at the same time maintaining the highest grade and finish. This object, it is claimed, has been accomplished in the new instrument. The following are some of its advantages: the auxiliary air valves and cage can be removed and reassembled by any novice without special tools; and the auxiliary air valve stem, one piece staff and head, guarantee the permanency of the valve and spring. The fitting which connects to the motor has standard threads and will fit any pipe connection. The throttle for the motor is simple and strong consisting merely of a rod and shutter placed between the mixing chamber and the engine connection and may be easily removed by loosening one screw. It is equipped with venturi tube giving the highest efficiency and aiding in perfecting the mixture. The float is of cork on copper and is not connected to the lever, therefore cannot stick or bind, guaranteeing positive action in all positions of the carburetor.

The Michigan Wheel Co., Grand Rapids, Mich., will display a complete line of their speed and towing propeller wheels in several brands. They are made of a good quality of bronze, every wheel being balanced by special machinery. The blades are ground to proper thickness throughout and are sharp on the edges. They are made heavy and strong in order to withstand the increased strain caused by the added speed. In addition to the line of speed and towing wheels will be shown a line of reverse gears and one-way clutches. These reverse gears are of the well-known planetary type, the gears being steel spur cut, only in use on reverse and are always in mesh and run in oil. The gear drum is large in diameter, balanced, and bronze bushed, the clutch rings and brake bands are ground to a perfect fit and are the same diameter as the drum—wide and powerful, and are provided with means for adjustment for wear and increased power. The gear shaft goes through the entire length of the drum and holds the clutch in perfect alignment, strong and compact.

The Monarch Valve Company, Brooklyn, N. Y., are exhibiting some improvements in and additions to their well-known line of Monarch gas engine and motor boat accessories. The 1911 Monarch Standard carburetor has some new features. The float valve is guided at the top through the screwed cover or cap by means of a trunnion made integral with the float valve, and a hard brass stamped float lever, the supply of gasoline is increased or decreased at the slightest change

of the level. This construction also insures against any possibility of a leak. The float valve projecting through the screw cap takes the place of the tickler with no chance of flooding as might occur should the tickler needle become bent or corroded sufficiently to stick and keep the float depressed. The stamped float lever will never need replacing. New this year is the Monarch special carbureter. In all respects this is the same as their Monarch Standard, with the exception of the horn-shaped automatic air valve.

Pfanstiehl Electrical Laboratory Co., North Chicago, Ill. The latest thing marketed by this company will be shown, that is the Pfanstiehl Junior magneto. It is designed to sell at a low price and is within the reach of all and can be used as equipment for even the lowest priced engine. It produces a low tension alternating current and in connection with the vibrating coil, mounted separately in the case of multi-cylinder, or under the arch of the magnets in the case of a single cylinder engine. It is guaranteed to operate any engine without the aid of batteries and in addition to this may be used for lighting purposes when the engine is running, supplying three, four or six candle-power lights, used to full candle power. The machine is remarkably efficient even at low speeds and at high speed it is mechanically governed within itself. There are no intricate parts used in the wires or windings anywhere in its construction. It is equipped for belt, gear or friction drive. In addition to this will be shown a very complete line of ignition appliances and accessories of all sorts.

Richardson Engineering & Mfg. Co., Hartford, Conn., will exhibit their regular line of complete electric light outfits, also electric specialties. They will have in operation, one of their direct connected lighting sets, suitable for boats, and 6, 7, 9 and 14 inch arc, searchlights, and an electric ship telegraph with which the signals to the engine room are operated by electricity instead of cable. They will have some of their latest styles of switchboards and their new boat outfits from \$85 up, each including switchboard, generator, batteries, etc. They will also have the new type storage battery. They have these in various sizes listed with the complete outfit, engine, generator, switchboard, storage battery, etc., from \$180 up. These will also be shown.

Valentine & Company, New York, will exhibit their model Submarine demonstrating as usual the unique qualities of Valspar, unique because Valspar actually and effectively resists the action of water, fresh or salt, according to the test shown. A new demonstration of this same water proof quality will be the showing of the various makes of Spar Varnish subjected to running water, thus simulating exactly the action of rain and spray on the finished faces. There will also be on exhibition, a set of mahogany panels, showing the effects of the alternate exposure to both water and weather on Valspar and 36 other makes of Spar Varnish from all over the world. The Valspar enamels, which are high grade colors, ground finely and mixed with Valspar, and which are adapted to both exterior and interior use, will be shown on panels, and last, the Valspar bronze bottom paint will be shown for the first time.

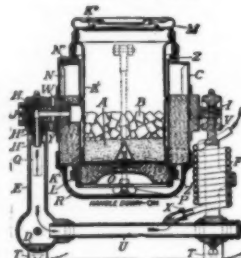
Hector, MacRae, Baltimore, Md., will display a full line of electric lighting and ignition accessories, featuring the Champion Accumulator, which is made in the following manner: A thin sheet of pure lead is bent and punched into a saucer-shaped tray, 3 inches square and $\frac{3}{4}$ of an inch deep and honeycombed with small round holes. This is then filled with the active material, in this case a paste made of lead and diluted sulphuric acid, the holes in the plate extending through to allow free circulation of the electrolyte or acid. In the rubber jar type a very solid construction is employed, using only 3 thick plates instead of 8 to 11 thin ones of the grid type. This accumulator is charged by a dynamo driven by a belt from the main engine, or in larger yachts by separate engine and dynamo set. These electric lighting systems include a switchboard having instruments and switches for measuring and controlling the current, and lighting fixtures and lamps, together with a search light, are in-

cluded as circumstances require. The object of the accumulator is to act as a reservoir storing the current generated by the dynamo.

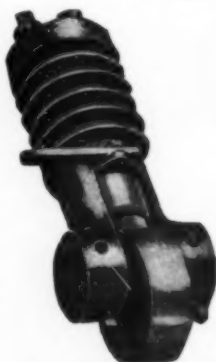
Electric Goods Mfg. Co., Canton, Mass. This company will display their usual very complete assortment of ignition appliances, featuring the "Perfex" low tension untimed alternating current rectified magneto. The rectifier on this magneto according to its manufacturers, eliminates three most usual magneto problems, that is, choking or sluggish action of the induction coil and vibrator of the ignition system; destructive arc or burning action between the vibrator point, and a



The "Neverout" double cylinder generator; Rose Mfg. Co.



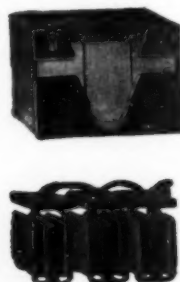
Sectional view of single cylinder "Neverout."



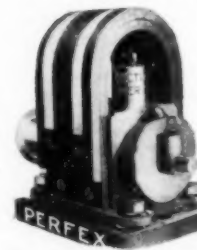
The Tiebout "Star" air pump.



Hyde Windlass Co. propeller wheel.



The Champion accumulator of Hector MacRae.



Electric Goods Mfg. Co.'s Perfex magneto.

variable voltage output necessitating the use of a governor to keep the magneto's armature within normal speed. This rectifier which is a patented device contained in a cylinder attached to the armature housing, prevents the first named trouble from occurring by providing a means by which this kick voltage is discharged into the condenser without interference. Although there are no moving parts in the rectifier its use in the Perfex magneto results, it is stated, in a wonderful increase in the gas igniting properties of the spark. In the second named trouble or arcing of the vibrator points, the rectifier provides an arti-

ficial load that serves to keep the voltage even and constant at all times. The third defect alluded to, that is variable voltage output, the rectifier abolished, it is claimed, by automatically regulating the voltage when the vibrator points separate and by automatically preventing any voltage increase should a wrong sized pulley be used causing normal speed to be exceeded.

Hyde Windlass Co., Bath, Me., will display a full line of speed and heavy duty propeller wheels. These propellers are made of Hyde manganese bronze which is a non-corrosive metal of very high tensile strength such as has been used, so it is claimed, for the last 15 years in the manufacture of propellers for ships of the United States Navy and Merchant Marine. They are made from metal patterns, correctly balanced and are finished very carefully. By reason of their very large blade area, it is claimed, that they run practically without vibration and are made up in diameters and pitches to adapt them to all service conditions. In addition to these propellers this company is marketing manganese bronze castings of every description and every weight, from one pound to ten tons.

International Correspondence School, Scranton, Pa., will display in their space, the mariners hand book, which is a part of their correspondence course in navigation. The course itself will be thoroughly outlined and explained to visitors at the show and will no doubt be of interest to prospective motor boat enthusiasts.

Insurance Co. of North America, Philadelphia, Pa. This company will have a booth at the show in which they will exhibit and explain their special form of insurance policy that they issue covering pleasure crafts against all marine perils including fire during the layup period.

Variable Power Gas Engine Co., New York City. This company will exhibit a new type of carbureter which they call the Eureka. This carbureter is an absolutely new departure in the carbureter line and has been specially studied and designed to meet the peculiar conditions of the two-cycle engine of either the two or three port type. It requires no special knowledge or instruction in fitting, claim the makers, as no adjusting is necessary in the fuel or air. It is said that this carbureter will use all kinds of gasoline, even if as low as .45 gravity, as for instance a mixture of 60 per cent. gasoline and 40 per cent. kerosene in which case it is stated not even priming with gasoline is necessary. The instrument is remarkably simple, being without springs, cork float, leather packing or stuffing box, automatic valves or other moving parts to make noise or by getting out of adjustment change the results obtained. The piston throttle is the only thing necessary to turn to obtain all the speed possible from the engine and it is declared that this carbureter gives an unusual flexibility of throttle range.

W. & J. Tiebout, New York City, are exhibiting several styles of the Star Air Pumps, more especially featuring the No. 1 pump used in connection with the motor boat whistle outfit. This pump is designed to meet the demand for reliable machines at a reasonable cost to be used in charging storage tanks with compressed air for all purposes where compressed air is required. It is small, requiring but $3\frac{1}{2}$ inches of space on the propeller shaft and 10 inches in length on either side of the shaft, requiring no appreciable extra power for operation. It will pump a 10-gallon tank up to 60 pounds pressure at 450 revolutions in about 10 minutes. It may be attached to any size of shaft by detaching the shaft from the engine and by slipping on cam and pump arms, or it is furnished with split cam and hinged boxes on the pump arms so that it may be attached without the annoyance of detaching the shaft from the engine. When sufficient air has been pumped the lever may be shifted holding the piston back leaving the cam to revolve at the shaft without coming into contact with the pump piston, stopping all wear and friction.

National Carbon Co., Cleveland, O. This company will have on exhibition their various types of Columbia multiple Batteries for ignition and lighting, their several types of Columbia Dry Cells and a very complete as-

sortment of electrical specialties for motor boat use.

Chas. P. McClellan, Fall River, Mass., exhibits a complete assortment of spray hoods and motor boat tops. The McClellan Simplicity spray hood is ideal for cruising by day, being used as an awning or spray hood and at night as a sleeping tent. It has peep holes for light at either end or on the side if desired, and is strongly built and neatly made, the frame being selected white oak, the fixtures and fittings of bronze metal, strong and shapely in design. The cover is of 8 ounce government khaki duck, the slide rods are of brass. These hoods are also furnished merely as a spray hood or as a spray hood with cockpit apron and all may be brailled up and used as an awning. These tops are furnished in all styles and sizes.

The Pyrene Mfg. Co., New York City. Pyrene is a combination of powerful gases in liquid form, but absolutely devoid of moisture, thus rendering it a non-conductor of electricity. When this liquid is subjected to a temperature of 200° or more it is instantly converted into heavy white gas which covers the fire like a blanket, excluding the oxygen and extinguishing the fire without damage to adjacent property. Pyrene will not freeze at a temperature of 100° below zero. It does not deteriorate with age, nor will it corrode metals. A piece of thin silk or other delicate fabric saturated with this fluid will dry in a few seconds, the Pyrene evaporating almost as rapidly as chloroform, leaving only a faint and not unpleasant odor which soon disappears. It is peculiarly adapted to any kind of oil fire, gasoline, turpentine, etc., or chemical fires and is very effective on incipient fires, such as oil-soaked waste, hay, excelsior and so forth. The extinguisher is 3 inches in diameter by 14 inches long and weighs about 5 pounds. It works like an ordinary oil gun, having an inside piston and plunger.

The Rose Mfg. Co., Philadelphia, Pa., will show their usual line of motor boat search lights, etc., together with a newly perfected patent gas generator, built on the principle of inverting. The act of turning the generator over breaks the contact between the wet carbide and the moist ashes, thereby discontinuing immediately the process of generation of gas. By reinverting the apparatus the process of generation is recommenced, it is claimed, immediately, thus eliminating the inconvenience of having to wait as with some generators. This generator is marketed under the well known name of "Never-Out." A double cylinder generator, shown herewith, is built in order to take care of a number of lights, such as search lights, port and starboard lights, and interior cabin lights. The company will show, in addition to the above, their line of search lights for which very high quality is claimed.

Motsinger Device Company, Pendleton, Ind., will exhibit their several styles of ignition appliances, including Motsinger Auto Sparker, the D. C. Magneto, Faultless Plug Switch and the Auto Sparker Charging Board. This last was designed to meet the demand for a simple arrangement whereby the storage battery may be charged at the same time it is being discharged. This board is small and neat and so simple that any one, no matter whether he has a knowledge of electricity or not, should be able to operate it. The case of the switchboard is made of brass, highly polished and lacquered. On the front is mounted a Motsinger Faultless Switch with a special plug. The upper part of the case contains the meter, the D'Arsonval type meter. Below the switch are three binding posts for the battery and the charging. By sliding the little plug switch to the right the meter will register the current output of the dynamo. On shifting it to the extreme left there will be registered a voltage of the storage cell. When these readings have been made and it is found that the dynamo voltage is greater than that of the storage cell, the plug can be shifted to the center. Now the current between the dynamo and the battery is closed regardless of any outside duties that the storage cell might add.

Janney, Steinmetz & Co., Philadelphia, Pa., will display their line of pressed steel tanks for either gravity or pressure feed of gasoline. The tanks are also made for air,

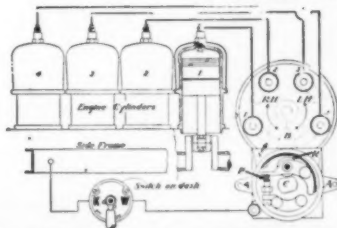
water gases, etc., in fact almost anything for which a steel tank is used. A special line of tanks is made for motor boats in all diameters and in any length up to 10 feet. These tanks are all seamless, of cylindrical shape, and rounded at the ends, their construction and shape making it almost impossible to develop a leak from natural causes. The tanks are also furnished with special attachments, such as an indicator fitted to the tank for either pressure or gravity. This indicator eliminates the usual annoyance of gauge



The Motsinger faultless plug switch.



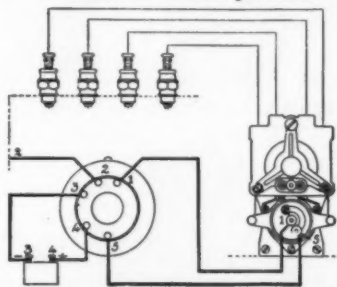
Kokomo Electric Co.'s high tension magneto.



The wiring plant of new K-W magneto.



A Chas. E. Miller product.



Wiring plan of starter outfit made by Simms Magneto Co.

glasses so prone to break. The indicator itself is inside the tank, the only part on the outside is a small calibrated dial, which accurately shows the amount of gasoline in the tank. Besides these tanks Janney, Steinmetz market a very complete line of pressed and drawn steel specialties, including automobile brake drums, etc., etc.

The Havoline Oil Company, New York City, will exhibit a complete line of oils and greases, specially prepared for the requirements of pleasure and business craft. They will also have a display of illuminated pictures of well-known boats, such as the Dixie III. and others, who have used their products with success during the past season. The advantages of the different consistency and grades of Havoline oil for each peculiar need will be thoroughly explained to visitors, and the exhibit will be of undoubted interest.

The Evans Stamping & Plating Co., Taunton, Mass., manufacturers of the well-known Paragon Reverse Gears, will exhibit a full line of their goods, consisting of eleven different models, ranging in capacity for use on engines from 1 to 200 h.p. This company is one of the largest manufacturers of marine reverse gears and it is claimed that the Paragon gears are now used by over 50 manufacturers of marine engines. In addition to the regular models a disassembled gear will be exhibited showing the internal construction, workmanship and material used thereon.

The Bosch Magneto Company, New York City. The exhibit of this company will show a number of ignition systems that have been developed during the past year. Prominent among these is the Model V, by which an ignition spark is obtained at as low, or even lower speed, in the full retard than in the full advance position. This has formerly been effected by the mechanical shifting of the fields in relation to the armature, which involved somewhat complicated construction. In the Model V, however, this effect is obtained by a re-arrangement of the electrical and magnetic circuits, but in outward appearance the instrument is identical with that of the well-known Model IV construction of the DU types. The DR4 and DR6 magnetos are shown with double distributor construction for the production of ignition at two points in each cylinder of an engine. This magneto has been the equipment of the Lozier, Marmon and other successful racing cars during the past season. The use of this system has been shown to increase the power output of an engine up to 20 per cent., its advantage being in accordance with the location of the spark plugs. The Bosch Duplex Ignition System is a novelty in ignition types. It permits continuous running on the high tension magneto, but for starting or at slow cranking speeds, a battery and primary coil are provided.

Stanley & Patterson, New York City. This company's exhibit will be devoted entirely to the Patterson battery set for motor boat ignition. The fundamental principle of this set is a screw top battery cell which without wires or binding posts screws into one solid rubber composition plate automatically making all connections. This molded rubber plate forms a solid, substantial waterproof cover for the battery box and as all contacts are molded solidly into this rubber plate no possible looseness of connections or bad contacts, trouble from dampness, or anything of this sort is possible. The battery cells are suspended from the plate and do not rest on any surface where dampness can collect. An automatic bridge in each cell receptacle permits the removal of one or more cells from the set without interrupting the sparking circuit and also provides a quick test for a weak cell without an ammeter. The cabinets are waterproofed even though submerged, for over the entire inside surface of the cabinet a heavy seamless layer of Neptune semi-rubber compound is flowed and between the plate and the cabinet is a heavy rubber gasket. Another specialty is a jump spark coil and battery complete in one cabinet by means of the cartridge screw top jump spark coil. This is screwed into the receptacle in place of one of the batteries, like the batteries automatically making all connections. The secondary terminal of the jump spark cartridge coil is in the form of a metal brush at the lower end of the coil. This brush makes connection with the metal plate in the bottom of the cabinet from which the necessary connections are made.

K-W Ignition Company, Cleveland, O., will show a complete line of their ignition appliances, including their several models of

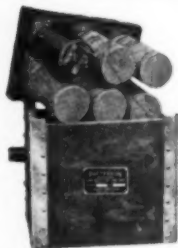
magnetos, spark plugs, their K-W Master Magneto and a full line of spark coils together with the new model J Magneto recently described. They are also showing a line of Parabolic headlights, together with the K-W electric converter or Parabolic Reflector for gas lamps. This can be applied to any gas lamp in a few minutes, thus changing to electric lamps, with no other tools than a screw driver and a pair of pliers and without making any alterations or changes whatever on the gas lamp. The reflectors are used at 1 1/4-inch focus and are true parabolas heavily silver plated and highly hand burnished. They are made in several diameters to suit the various gas lamps on the market. The exhibit will be very complete and of undoubted interest.

Chas. E. Miller, New York City, will show the complete line of general accessories for motor boat use, including spark plugs, metal polish, Valgrinok, which is a little box containing three grades of valve grinding compound, several different styles of acetylene burners, the Hill gasoline lock valve which is a valve operated by a lock and key and is designed to be placed in the gasoline supply pipe between the carburetor and tank so that the fuel may be cut off and locked so, the Gyrex mixer, the Boston combination oil and grease gun, lubricating products made by the U. S. Graphite Co., Guide electric lamps and practically a complete line of almost every kind of motor boat accessories.

The Simms Magneto Co., New York City. This company is exhibiting a full line of their well-known magnetos. Each magneto mounted on a separate column and driven by a small individual motor, is shown in working order. The principal types manufactured by this company are: SD6, for large six-cylinder motors; S6, for small six-cylinder motors; SD4, for large four-cylinder motors; S4, for medium size four-cylinder motors; SU4, for small four-cylinder motors. Special attention is drawn to the SU4 type, which the company has only been manufacturing during the last two years. Considering the small size of this magneto, it produces a most powerful and efficient spark, due to the improvements which have been made upon this machine. The so-called dual ignition set will also be shown in operation. This system consists of a high tension magneto, carrying a separate timer for making and breaking the circuit of the battery current, and of a coil which is mounted horizontally on the dashboard. The Simms Motor Starter is the novelty placed upon the market this year by the above company. This entirely new starting device was exhibited for the first time at the last Olympia show in London and at the recent Madison Square Garden Automobile show. This system consists of the usual high tension magneto, and of a neat brass switch mounted on a dashboard. When the switch is in the "on" position, a small trembler, encased in the switch, begins to operate, and allows the battery current to flow through the primary winding of the magneto. The high tension current which is then generated in the secondary winding of the magneto armature is then distributed in the usual way to the cylinder, which is filled with explosive mixture.

American Silur Company, New York City. This company's exhibit will consist of marine smokestack and engine paints. They will also have a wood and steel paint which, it is claimed, is non-fouling, barnacle and acid proof. They will demonstrate where it has been immersed in the East and North Rivers for a long period and has resisted the ravaging and destructive elements that develop on the bottoms of boats. It is interesting to note that the German Ministry of War decreed the use of this company's paint in both their naval and army departments. According to an analysis this paint contains 8 per cent. calcium sulphate, 8 per cent. magnesia sulphate, 53 per cent. magnesia silicate and 31 per cent. iron oxide. There is no doubt that the speed of a boat depends greatly on a clean bottom and this paint should be most popular.

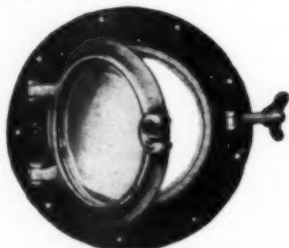
Gus A. Diem, New York City, will exhibit a full line of marine plumbing, including lavatories, pumps, closets, port lights, ventilators, outboard connections, sea valves, deck plates, screw plates, and so forth, from booth 38.



Patterson wireless battery set showing induction coil feature.



A Gus A. Diem product.



The Diem portlight.



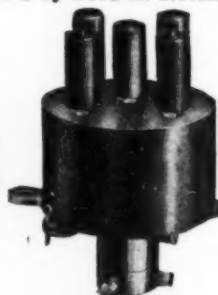
Gordon Propeller Co.'s outfit.



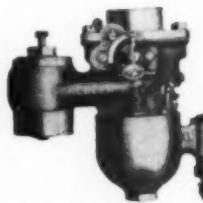
The lever wrench—sold by Fred E. Nevin.



Patterson "Wireless" battery box.



The new distributor of the New York Coil Co.



The Schebler carburetor.



The new Planhard carburetor.

In the manufacture of this line according to the maker, particular attention to every detail by experienced mechanics, is the paramount idea and by a complete and thorough demonstration they will try to show the superiority of their products.

Fred E. Nevin, New York City. The two principal articles to be exhibited at this space are the Ronson wrench and the Lever wrench, the latter manufactured by the Lever Co., Newark, N. J. This wrench is somewhat novel in operation. The knurl is screwed up like the old fashioned wrench, then by means of toggle lever the jaw is clamped home, holding the wrench as rigid as an open end wrench and eliminating the usual difficulties and exasperation of the knurl unscrewing and letting the wrench slip. The Ronson wrench is well known and consists of four double and open end wrenches fastened together by a butterfly nut.

Wheeler & Schebler, Indianapolis, Ind., will show their usual line of Schebler Carburetors. For the benefit of those who have not already read one, we will give a brief description: Schebler carburetors are made of brass. Aluminum will be furnished in special orders. The bowl design combines compactness with practicability, it serving for reservoir as well as having the float chamber embodied therein. The float is made of cork, heavily shellaced and hinged. Attention is called to the size of gasoline valve; it being much larger than ordinarily used. Gasoline is supplied through a reversible union, which permits the feed pipe to run in any direction desired. The throttle on Models D and E is made interchangeable with the automatic air valve so that they can be used on either top or side of bowl as occasion may require. A drain cock is placed in bottom of bowl for cleansing purposes. Attention is called to the location of the spraying nozzle. Being in the center of the chamber, it eliminates the changes in the quality of the mixture such as occur in carburetors where the nozzle is located to one side of the oil reservoir.

Columbia Brass Foundry, Freeport, L. I., N. Y. A very attractive exhibit is planned by this company, showing their full line of Columbia speed propellers and accessories. There will be shown propellers of all styles and sizes, from 10 inches to 48 inches, and this company is this year bringing out a new style of propeller, which they call their Architects Propeller. This propeller is of the elliptical shape with fairly wide blades and embodies the latest approved ideas from naval architects for this type of wheel. There will also be shown a complete assortment of the new Columbian Universal Struts which are made of manganese bronze with a universal self aligning bearing of anti-friction bronze. Among other accessories will be rudders and propeller shaft equipments and other under water accessories for motor boats.

The Philadelphia Storage Battery Co., New York City. This company will show a full line of storage batteries adapted for marine service. Sets of convenient size and form to meet all requirements presented in motor boat service will be shown. A special display of structural details will be used to demonstrate the rugged qualities of these batteries and visitors will have an opportunity to get an insight into the methods of producing a modern storage battery. This company's distinctive feature will be the Diamond Grid Plate, which enters into their battery construction and for which remarkable claims are made. Together with these will be many lighting fixtures of various types to demonstrate the utility of the storage battery in general. A number of improved features in storage battery construction are shown and the company expects to provide attendants to give practical help to inquirers in solving their electrical problems in an impartial manner.

Chas. H. Gillespie & Sons, Jersey City, N. J. This company will display the Monarch Bulldog paint and varnish remover, which is especially adapted for use on motor boats and vessels where the varnish and wood have become stained from wear, together with the Monarch spar varnish, which is used exclusively by some of the largest railroad corporations in their marine departments. Colored varnishes under the name of Monolac

will also be a prominent feature, as it is claimed by this company that it is the only color varnish on the market that will withstand the atmospheric changes and salt water. These and many other specialties together with practical demonstrations will form an exhibit of undoubted interest.

The Gordon Propeller Co., Cincinnati, Ohio, will show two working models of the Gordon reversible propeller, mounted together with two and three blade hubs, showing the manner in which the blades are held in position. They will also show blades ranging in size from 12 to 54 inches, illustrating the fact that the Gordon is a reversible propeller practical for all sizes of boats. The following are some of the other things shown: hubs with the casings removed, showing facility in blade changing, unfinished blades as they come from the foundry showing torsional strength of the material, complete wheels with their parts ready to be assembled, a pinion screwed and sweated onto the sleeve, stern bearings and stuffing boxes, wheels with blades adjusted at neutral, full speed ahead, full speed astern, intermediate and feathering. The Gordon wheel is well suited for sailing craft with auxiliary power, and the company claims a greater adaptability to both engine and sails than other reversible propellers.

The Planhard Mfg. Co., Kokomo, Ind., will exhibit the Planhard carbureter. The makers of this carbureter claim that it is the only one of the ball type on which the auxiliary ball air valve may be adjusted while the motor is running. It was the intention of the inventors to design a carbureter embodying simplicity and facility of adjustment. Also to do away with all springs which are affected by weather conditions and which settle by constant use. The carbureter has only two adjustments, adjusting gasoline for low speed and the auxiliary ball valve for high speed. The intermediate speeds of the motor between the low and the high adjustments are taken care of by the different balls which are six in number and of the same size and weight. The suction of the motor caused a partial vacuum in the carbureter, thus allowing the atmospheric pressure to lift one ball at a time between the low and the high speeds.

A. Herzig, 1777 Broadway, New York City, will exhibit the Mea Magneto and the "Carbureter G & A," for both of which he is the agent. Both of these products are well known, having been described frequently. The particular points of the carbureter are well remembered, being that there are no adjustments ever required and that no springs, diaphragm valves or dash pots are used in the construction. The principal features of the magneto are that it has a timing range of 70 degrees, the same intensity of spark being given at either full advance or full retard, making it possible to start the motor on the magneto without any danger of a kickback. The fact will also be remembered that the whole magneto may be removed from its cradle in about ten seconds and taken entirely out of the boat, making a theft of the boat impossible.

E. J. Willis Co., New York City, will show a most complete line of both fittings and equipments for motor boats from the smallest to the largest craft propelled by gasoline motors. They will be located on the balcony in No. 6 and No. 4, where they will exhibit the well-known Bryant & Berry speed propellers, the new 1911 Hendricks' magnetos, Yankee whistle outfits and mufflers and Tiny Evernude rowboat motors. There will also be many other new devices among their collection, such as electric signals, horns, varnish, varnish remover and specialties of many kinds.

Jeffrey-Dewitt Co., Detroit, Mich. This company's exhibit will consist of an elaborate demonstrating outfit upon which their entire line of spark plugs will be displayed. The exhibit will be interesting and novel by reason of the fact of the various conditions existing in the motor cylinders will be duplicated as nearly as possible so as to show the action of these plugs under actual service conditions. One noticeable feature in this com-

pany's production is their similarity of appearance, although each type of plug is distinctive and manufactured to fulfill the demands of different conditions and requirements. This similarity is due to the fact that the same metal parts and improved method of packing is used in all types, thus standardizing the entire line, the difference being confined to the cylinder end of the porcelain or to a different arrangement of the electrodes.

Wm. E. Kemp, New York distributor for Byrne, Kingston Co., Kokomo, Ind., and the Kokomo Electric Co., Kokomo, Ind., will exhibit a full line of well-known Kingston carbureters in their various sizes, from $\frac{3}{4}$ to 4 inches. They will also exhibit the Kokomo Electric Co.'s complete line, which consists of high and low tension magnetos, jump spark coils, and various types of cabinet work, make-and-break and primary coils in all sizes and styles. Also the Kingston Mica Spark Plug. The Kingston Model B magneto, which is shown herewith, is designed to meet the requirements of those wishing a double ignition system at practically the cost of one. The display will be very complete and will undoubtedly be of interest.

C. F. Splitdorf, New York City, will exhibit a complete line of their standard magnetos, coils, spark plugs, switches and timers. They will also show their latest Model T magneto, which has been produced to meet a popular demand for a magneto with a vertical distributor block. This system used in the Splitdorf magneto is the one having an armature with but one winding and giving a current of comparatively low tension. The current is discharged through a transformer, having low and high tension windings somewhat similar to a regular spark coil. This steps the current up to a voltage sufficiently high to enable it to jump the necessary gap between the points of the spark plug in the compression in the cylinder of the motor. The armature is mounted on two annular ball bearings. The Common Sense spark plug is constructed in such a way as to obtain the longest insulating surface possible without increasing the size of the plug itself. To do this a mica bushing is formed on a taper consisting of lateral windings of mica, composed of sheets, the full length of the insulator. This mica bushing is inserted into a small bushing or nut and is forced to a solid formation by the central electrode.

New York Coil Co., New York City, will exhibit their usual complete line of ignition appliances together with a Rhoades' Unit Spark System and a new distributor and switches. This last named instrument is one of their latest productions. In this instrument the length of timer contacts can be varied by the turning of one adjusting screw when the engine is running. An examination of the cut shown herewith will show a deep recess turning in a solid shaft. Glass hard pins are inserted through holes at right angles to recess. A liberal bearing runs the full length of the instrument through the upper section of which a slot is formed in which the contact operating arm works, the movements being given same by the hardened pins in the shaft. A very exclusive feature is the rubbing contacts which is accomplished by the novel construction employed in mounting the contact arm.

A. S. Morss & Co., Boston, Mass. The Bay State Autokit and the Bay State Stickit will be shown. The Autokit is a set of socket branches with swiveling reversible handles several extension shanks and a universal joint by means of the various combinations to which these parts are susceptible almost any nut or bolt in or around the engine may be removed with great ease. The Stickit is a new wrench set consisting of a double ended ratchet wrench strapped to seven strong stamped steel sockets strung on a square steel shank. The Morss company is exhibiting these for George A. Cutter, of Boston, Mass. In addition to these will be shown a complete line of marine hardware specialties, among the newest of which are the Skene Chock and the Morssco Baby control levers. This fitting has recently been produced to meet the demand for a small neat fitting to

lead the regulation for timer and throttle to a point near the steering apparatus.

The Snow & Petrelli Mfg. Co., New Haven, Conn. This company's exhibit will consist of a line of reverse gears and "one-way" clutches. They are making regularly this year ten sizes of reverse gears and four sizes of clutches. There will be a small exhibit of a reverse gear run by a small electric motor as well as an exploitation of a rear starting device which is adaptable particularly to slow speed engines up to 15 h.p. and for high speed engines up to 30 h.p. These gears are furnished in four sizes to adapt either to a hub made by the company or to a shaft as preferred, as well as in types with frames where it is desired to crank the motor aft of the bulk head.

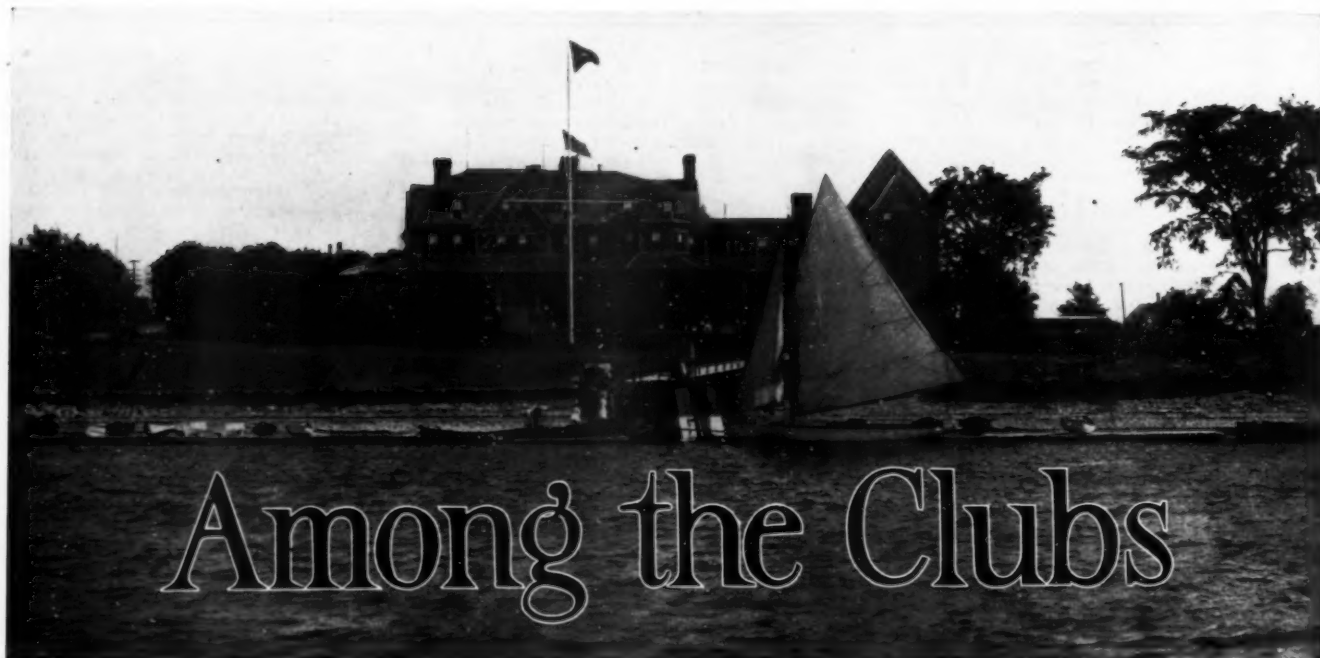
L. O. Koven & Bro., of New York City, manufacture a very complete line of gasoline tanks together with whistle outfits, water tanks and a line of mufflers and condensers. They will show this line together with samples of heavy sheet iron and plate steel work and galvanizing of all kinds of boat work which they do. The exhibit will be large and of great interest.

S. F. Bowser & Co., Fort Wayne, Ind., will display all varieties of outfits and systems, showing self-measuring, non-measuring, long distance, direct connected and portable styles; illustrating the maximum variation of adaptability. Probably the most important new feature in this exhibit is the Bowser Centrifugal Filter. This is a recently patented device constructed entirely of metal, it is claimed, and has given perfect satisfaction under the most severe tests. This attachment is guaranteed to eliminate all water and other foreign substances that may be in the gasoline. The filter is attached directly to the discharge pipe on the pump and the gasoline is filtered as fast as it is pumped, without extra exertion or loss of time. It does away with the uncertainties of the old style Chamois filter.

The Atwater-Kent Mfg. Works, Philadelphia, Pa., will display a very complete line of their ignition appliances for motor boat use. One of the interesting features in this exhibit will be the Atwater-Kent Unisparker. This unisparker, which has been described heretofore, has been lately fitted with a special bracket designed by F. R. Parker, of Boston, whereby it may be used on engines where otherwise there would not be room for it. There will be a complete demonstration and explanation at the Atwater-Kent booth and the exhibit will be an interesting and instructive one.

The Monitor Boat and Engine Co., Newark, N. J. This company markets a very complete line of knock-down boat frames which they call the K.D. line. The Monitor Fully Fitted frames leave nothing for the purchaser to do except to re-erect and fasten the fitted parts together permanently—before proceeding with the planking. In these frames, keel, stem and stern properly shaped, rabbeted and fastened with the shaft log and hole put in are set up in the company's factory—form ribs are stayed together, with sheers in place and all other ribs properly curved, beveled and drilled at sheers and keel, fitted exactly to their proper place and marked, so that the result is a perfect boat frame temporarily fastened. It is then knocked for shipment and can be easily re-erected at its destination, and when re-erected, after a few hours' work is ready for the planking. Full directions for setting up planking and other work in finishing are furnished together with the frames.

The Cape Cod Power Dory Co., Wareham, Mass., expect to exhibit one of their 20-foot special dories with a 5 ft. 6 in. beam having a cabin over the motor at the after end; smooth planked with a $3\frac{1}{2}$ h.p. Palmer motor, make-and-break ignition. The seats in this boat are all locked and inside finished with spar varnish and the motor installed is a $5\frac{1}{2}$ h.p. Ferro with reverse gear and jump spark ignition together with a magneto. There will also be on display one of the company's 12 ft. rowing skiffs, together with some of the other specialties which they market, such as bilge pumps, etc.



Among the Clubs

Brooklyn Yacht Club, Bensonhurst, Brooklyn, N. Y. Extensive plans for summer activities have been made under the new officers of the club headed by Commodore William Randolph Hearst, and from all appearances this will be one of the most active clubs on the list. In accordance with present plans



The Hearst trophy presented to the winner of the Cape May race.

the club will hold power boat races on Saturday of each week beginning on June 3d and ending on September 2d. There will be three classes, the first for boats between 50 and 70 feet in length; the second for boats between 30 and 50 feet in length, and the third for open boats up to 30 feet in length, no speed or semi-speed boats being allowed in any of the classes. Substantial prizes will be awarded in each class where there are two or more starters with the intention of completing the course, and where five or more start and complete the course a second prize will be awarded in each class. Prizes will be awarded on the same day of the race. If the regatta committee concludes that a sufficient number of the boats entered in the first two classes have not a fair chance of winning the races according to their rating, it will in all probability organize a handicap class. There will be awarded at the end of the season in each class a substantial point prize. On the first day of July the Cape May races will be commenced and on the same day the club will hold races under the name of the Fire Island Lightship Race. There are some valuable cups to be awarded, among which one of the latest has been offered by Mr. Hearst, the new commodore.

New England Engine & Boat Association, Boston. The fifth annual open motor boat

race for the championship of New England, as stated upon page 46 of the February issue of *MoToR BoatinG*, will be held under the sanction of the American Power Boat Association, upon July 4, 1911. Through an error it was stated that the events were in charge of C. Frank Moore who is interested in the formation of a New England Power Boat Association. The committee in charge of the events to be held by the New England Engine & Boat Association, consists of Norman L. Skene, A. N. Dodge, A. P. Homer, Chester I. Campbell and W. B. Stearns. Mr. Skene, whose address is 210 Commercial Street, Boston, is chairman. We show on this page a cut of the bronze challenge trophy offered by the association.

Duluth Boat Club, Duluth, Minn. A big launching will be the summer feature of this club's activities if the tentative plans now under way are rounded out into completion. The plans include a week's carnival of water sports that will be one of the biggest things in the aquatic line ever managed in the central west. The Northwestern Rowing Regatta is to be held with crews from St. Paul, Minn., Winnipeg, Kenora, Portage, and possibly other cities. The Naval Reserves of the Great Lakes are planning to come to Duluth for two days with eight ships and 2,000 men, and they will hold their regular boat races, drills and other events together with evolutions by the entire fleet. The boat club itself is planning a very complete series of motor boat, canoe, rowing, and sailing races together with its annual Venetian fete. This much is already definitely planned; the big plan, however, is to crowd all these attractions into one week and make a gigantic show, probably the largest event in the central west.

Memphis Power Boat Club, Memphis, Tenn. At a recent meeting of the club the following officers were elected for 1911: Commodore, V. A. Cordes; vice-commodore, Claude Anderson; secretary and treasurer, E. C. Cochran. The club has succeeded in getting the city council to instruct the wharf master that visiting launches tied up at the city front for a reasonable length of time are not to be charged wharfage as has been the custom in the past. This will be appreciated by a large number of motor enthusiasts who will make the trip down in the fall and back in the spring. The club is also extending cordial invitations to all visiting launches to make the club their headquarters while in the harbor.

Sheepshead Bay Yacht Club, Brooklyn, N. Y. The following officers have been elected for 1911: Commodore, Stephen G. Young; vice-commodore, H. Frank Darrow; secretary, William Van Waardt; treasurer, F. W. Shepard; fleet captain, Arthur Smith. To stimulate what the club calls "live timber" the initiation fee has been waived for a limited time and enthusiasts are invited to inspect the club property. An artistically illustrated book has just been issued by the club.

Astoria Motor Boat Club, Astoria, Ore. This club is planning to give this year what promises one of the largest regattas that has ever been held on the Pacific Coast, beginning September 4th and lasting the entire week. These dates have been given to the club by the Pacific National Power Boat Association, for the Pacific Coast Championship Race.

Westchester Motor Boat Club, Classon Point, N. Y. At a recent meeting the following officers were elected by the club: Commodore, William H. Ferris; vice-commodore, William Torbeck; secretary, Charles B. Lambert; treasurer, Edward Hehre; fleet captain, Henry W. Piering; fleet surgeon, Henry Hehre; directors, George Auer, Sidney B. Hickox, Alfred Gattendem, Bernard Nathan. The club was recently organized by boat owners making headquarters at the Hehre-Auer Launch Works, Classon Point, New York City. The club has a good location, the anchorage being in sheltered creek (with marine railway), free from commercial traffic, a short distance from the lower Sound. The membership list will show about 50 names and it is expected that 25 boats will carry the club colors. The entertainment committee is making plans for a beef-steak dinner and the club members are all looking forward to keeping "something doing" from now on.

New England Power Boat Association, Boston. C. Frank Moore, of 220 Devonshire



Trophy offered by the New England Engine & Boat Association for the July 4th races.

Street, Boston, is interesting motor boating enthusiasts in the formation of a New England Power Boat Association for the purpose of promoting motor boat racing as a means of stimulating the sport. It is probable that annual races will be held for an Open New England Championship and all who are interested are invited to communicate with Mr. Moore.



The busy appearance of the boat shops indicates that many new craft will be seen during the coming season.

A New New York Agency for the Gray Motor Company.

W. C. Disbrow, Jr., has taken complete charge of the New York City agency of the Gray Motor Co., of Detroit, with offices at 30 Church Street. Mr. Disbrow succeeds H. G. Diefendorf with whom he has been associated for some time and who gave up the New York agency to take up a position with the home office as general manager. The W. C. Disbrow Company will carry a complete stock of Gray motors and parts.

William J. Deed, Jr., N. A., Moves.

Owing to an increasing amount of business, William J. Deed, Jr., naval architect, of Boston, has moved his office to 220 Devonshire Street.

Gordon Propeller Company Elects General Manager.

H. C. Stahl, a banker and manufacturer of Bellevue, Ohio, who recently became interested in the Gordon Propeller Co., of Cleveland, has been elected vice-president and general manager of the concern. Increased facilities for the handling of both large and small wheels have been made possible by the change in management and the company is at present getting out some large wheels for ocean-going cruisers.

New Products for Mechanical Devices Co.

The Mechanical Devices Co., of Watervliet, N. Y., have issued their 1911 catalog which contains a number of features particularly interesting to motor boatmen. This catalog includes marine specialties of all kinds in addition to the devices patented by the company.

Borden Yacht Agency Moves.

The L. L. Borden Yacht Agency, of Boston, have moved from 44 Kilby Street to 220 Devonshire Street, where they have larger quarters and better facilities. They have with them a naval architect and a marine engineer for the convenience of their clients and they expect to carry, in addition to their other work, a number of reliable motors.

Motor Lighthouse Tenders for Alaska.

The Alaskan Lighthouse Service in Alaska has recently been equipped by the United States Government with eight heavily built motor tenders which have been constructed by the Curtis Power Boat Co., of Portland, Ore. Six of these boats are 18 feet long with a 5 ft. beam, one is 23 feet long with a 5 ft. beam, and one is a raised deck cruiser 30 feet long with a 7 ft. beam. The first seven are of the whaleboat type. These craft will be used for carrying mail, supplies, etc., to the more isolated lighthouses and will be equipped with Scripps four-cycle motors. Five h.p. single cylinder engines will be used in the open boats and a 10 h.p. two cylinder motor in the cruiser.

Old Town Canoes.

On page 19 of the February issue of MoToR BoatinG a paragraph referred to E. M. White & Co., of Old Town, Maine, as builders of the Old Town canoe. Our attention has been called to the fact that the only canoe bearing this name, which is copyrighted, is manufactured by the Old Town Canoe Co., of Old Town, Maine. The reference to the copyrighted name was inadvertently made and we take this opportunity of correcting the statement.

New Agencies for Caille Motors.

The Caille Perfection Motor Co., of Detroit, have announced the following branch offices which will carry at all times a complete stock of motors: George G. McLaughlin, 24 Washington St., North Boston, Mass.; Bruns, Kimball & Co., 126 Liberty St., New York; Osborne Marlow, Savannah, Ga.; Woodhouse Gasoline Engine Co., 78 Washington St., Seattle, Wash.; Marine Engine & Supply Co., 121 East 6th St., Los Angeles, Cal.

Michigan Wheel Co. Open Eastern Branch.

The Michigan Wheel Co., of Grand Rapids, have opened an eastern branch at 4 Dey Street, New York City, in charge of R. A. Corley,

recently with the Fairbanks-Morse Canadian Mfg. Co., of Montreal.

The Hacker-Pouliot Boat Co.

This concern has taken over the Detroit Launch & Power Co., and the Pouliot Boat Co., and will hereafter be known as the Hacker-Pouliot Boat Co., of Detroit.

National Association of Engine & Boat Manufacturers.

John J. Amory, Henry R. Sutphen and C. A. Criqui, of the National Association of Engine and Boat Manufacturers, New York City, have nominated for a term of three years as members of the executive committee, class of 1913, the following: James Craig, W. H. Mullins, Eugene A. Rjotte, C. L. Snyder and Crispin Oglebay.

Another Large Marine Engine Order.

What is said to be the largest order for marine motors has just been placed by the W. H. Mullins Co., of Salem, Ohio, with the Ferro Machine & Foundry Co., of Cleveland, calling for 2,000 engines to be delivered within 90 days from the first of January. It is stated that this is but a portion of the number which will be needed for the season's business.

The Buffalo Motor Boat Show.

The motor boat show which will be held at Buffalo from March 25th to April 1st, under the management of Dai H. Lewis will possess a number of novel features. Most of the space has already been contracted for and the fact that an artificial lake, capable of floating the largest cruisers exhibited, will be constructed, gives an added interest to the show. An island will be located in the center of the lake and many of the exhibits will occupy this.

"Building a 32-Footer."

Owing to a misunderstanding an article which appeared in the February issue of MoToR BoatinG was written under the pseudonym "Doc." We have been asked to state that this article was written by and should have been credited to Dr. Eugene Swayne, of the Yachtsmen's Club, of Philadelphia. The name of the boat mentioned is "Eugenia," and not "Swan," as stated.

Kenyon Take-Down Houses.

The R. L. Kenyon Company, of Waukesha, Wis., have issued three new catalogs and booklets containing information regarding their portable and take-down houses, motor boat tops, cushions, etc. A booklet entitled "Obeying Nature's Call" is printed in colors and contains a description of an ideal type of portable house. This type is made in many sizes and is so compact that it may be easily stored in a very small space.

1911 Shows.

NEW YORK: February 21st to March 4th. Annual show of National Association of Engine and Boat Manufacturers, to be held in Madison Square Garden. Manager, Capt. J. A. H. Dressel, Madison Square Garden Tower, New York City.

PHILADELPHIA: March 11th to 18th. Motor Boat Show, held under the auspices of the Ocean City Yacht Club in the First Regiment Armory. Address, H. D. LeCato, 503 Franklin Building, Broad & Chestnut Sts., Philadelphia.

DETROIT: March 13th to 18th. Annual motor boat show, held in Wayne Pavilion.

BUFFALO: March 25th to April 1st. Fourth Buffalo Power Boat and Sportsmen's Show to be held at 65th Arsenal under the auspices of the Buffalo Launch Club. Manager, Dai H. Lewis, Buffalo, N. Y. The Exhibition will not be open upon Sunday.

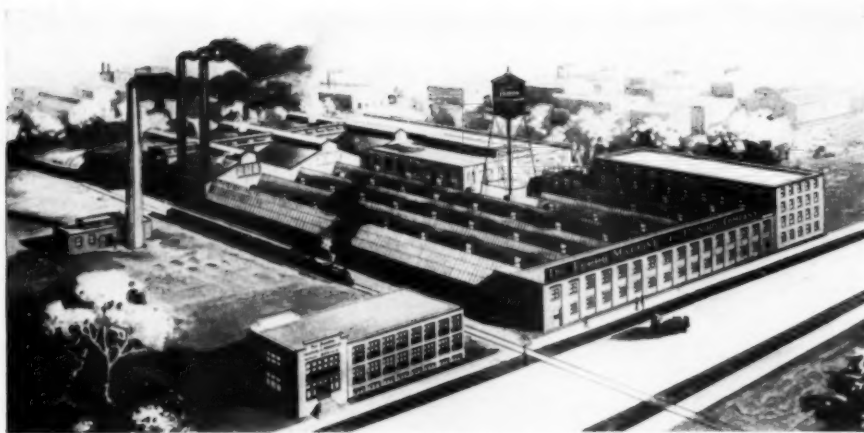
MONTREAL: April 1st to 8th. Automobile and motor boat show to be held under the auspices of the Automobile and Aero Club of Canada in Coliseum Building. Manager, E. M. Wilcox, 123 Bay St., Toronto.

Racing Events.

PALM BEACH REGATTA: March 14th to 17th. Seventh annual regatta on Lake Worth. T. D. Wells, chairman regatta committee, 32 Broadway, New York City.

BERMUDA RACE: June 17th, 2 p. m. This race starts from the flagship of the Motor Boat Club of America, which will be anchored in Gravesend Bay, New York City, and the finish will be off St. David's Head, Bermuda.

NEW ENGLAND ENGINE & BOAT ASSOCIATION: July 4th. Fifth annual open motor boat race for the championship of New England, held off the club house in Boston Harbor.



The plant of the Ferro Machine & Foundry Company, of Cleveland, O.

The New Ferro Plant.

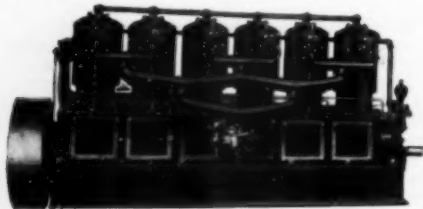
We show above an illustration of the Ferro Company's enlarged plant at Cleveland. In the foreground is the new office building that is to house the office force which looks after the large marine engine business. The three-gabled roof building in the background is one of the additions made to the foundry during the past year, an addition made necessary by the rapid growth of the Ferro business. Just behind the water tower is the new core room.

Until this month the administration offices of the Ferro Company were located in the down-town section of Cleveland. The factory is in another part particularly adapted for such an industry, where it is nearer the raw material market, and the shipping facilities are such as to cut down expenses. Heretofore this arrangement worked very well, but the rapidly-growing business, with its attendant increase in the number of details to be looked after, made a change absolutely necessary.

The Ferro factory, with these additional 70,000 square feet, now covers an area which makes it by far the largest plant in the world devoted to the manufacture of marine engines. It gives employment to over 1,200 people. All the machinery, a large percentage of it of special design for the building of Ferro engines, is electrically driven.

The 1911 Cup Defenders.

The Emerson Engine Company, of Alexandria, Va., in addition to a number of fast boats already turned out for the season, announce that there are in course of construction at their shops, 32 boats, each of which has a guaranteed speed of from 30 to 52 m.p.h. Four of these for which they are supplying the power equipment are expected to enter for the defence of the Harmsworth Trophy, each having a guaranteed speed of 45 m.p.h., and in addition to this a boat is being constructed for Mr. Dupont, of Wilmington, Del. This craft is expected to do better than 45 miles. It is stated that some of the craft under construction, equipped with motors ranging from 125 to 900 horsepower, will not total more than four pounds per horsepower, with the motor alone weighing less than two pounds per horsepower.



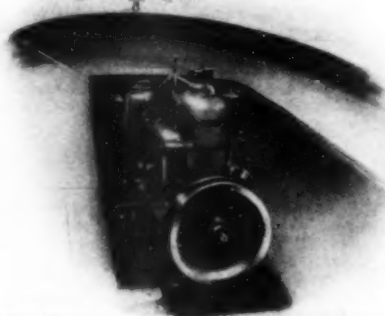
The 150 h. p. Anderson with a $9\frac{1}{4}$ in. bore and 11 in. stroke, 4-cycle, jump spark.

A New Plant for the Lackawanna.

For several years past, since the Lackawanna Manufacturing Company has been building the Lackawanna motors in Newburgh, New York, the management had

felt the urgent need of larger facilities for production. In removing from Buffalo to Newburgh in 1905 a substantial increase in space and equipment was had, but in the past two years the business had rapidly outgrown the facilities. Last year a new testing building was added to the plant and a new two-story brick machine shop was completed only last November. Further space for expansion, however, was then impossible by reason of the thickly built section surrounding the property. It became necessary to find a place with more room, on the water front preferably, and in Newburgh or at an equally good shipping point.

Just such property became available in December in the Newburgh Steam Mills, one



The Hydrex Silencer installed in a 25-foot motor boat.

of the finest properties of the \$14,000,000 Garner Estate. This property consists of a fine six-story modern factory building, 350 x 60 feet, with large two-story extensions, 60 x 100 feet; a large four-story separate factory 65 x 100 feet, together with separate power house and 750-h.p. Corliss engine, electric plant, storage sheds, office building, etc. The whole is located on a plot 1,000 x 200 feet directly on Newburgh Bay, with West Shore Railroad and switch at rear, as shown in the illustration.

It has been purchased outright from the heirs by the Caldwell Lawn Mower Co. - Lackawanna Mfg. Co. interests and both companies are now located therein in separate and distinct plants comprising what is believed to be one of the best

manufacturing and shipping points anywhere within a radius of 60 miles of New York City. Twenty-five feet of water right up to the thousand feet of docking gives excellent facilities for marine and boat business at one of the most prominent cities on the Hudson.

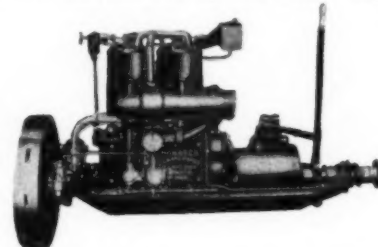
Francis G. Hall, since 1908 vice-president and general manager of the Lackawanna Manufacturing Company, is president.

The new line of motors for 1911 is now well under way, and with such a largely increased capacity the Lackawanna will be available in unlimited quantity for all demands in the coming spring and season of 1911.

In addition there will be brought out aero and heavy-duty engines of high power and efficiency. The main offices of the company are at 126 Liberty street, New York City.

The Monarch Motor.

An entirely new feature is shown in the motor manufactured by the Grand Rapids



The Monarch Motor, showing bypass.

Gas Engine & Yacht Co., of Grand Rapids, Mich. This feature is embodied in a by-pass located in the air passage inlet. By means of this by-pass, or three way valve, the operator is enabled to run a cold charge into the motor for gasoline or a superheated hot charge when running upon kerosene or other less volatile liquid. The charge temperature may be accurately regulated by the angle at which the by-pass is set, permitting high compression without knocking with a corresponding increase in fuel economy and power development. These motors are made in all sizes from one to six cylinders, the larger models being equipped with a governor for controlling the speed.

The Hydrex Silencer.

We show on this page a photograph of the Hydrex Exhaust Silencer manufactured by the Hydrex Silent Exhaust Works, of 126 Liberty St., New York. Its simplicity may be seen from the method of installation shown in the photograph of the 12 h.p., two-cylinder motor in a 25-foot boat belonging to Captain Frank Callyer of New York City. This silent exhaust allows the explosion to pass noiselessly into the air with practically no loss of power or efficiency, at the same time dispensing entirely with pipes and a muffler.



The new plant of the Lackawanna Manufacturing Company.

MOTOR BOATING

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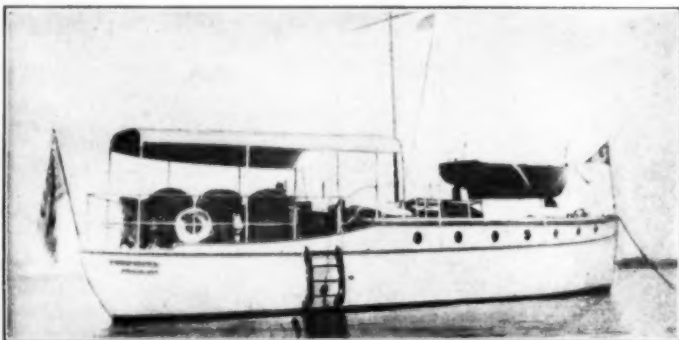
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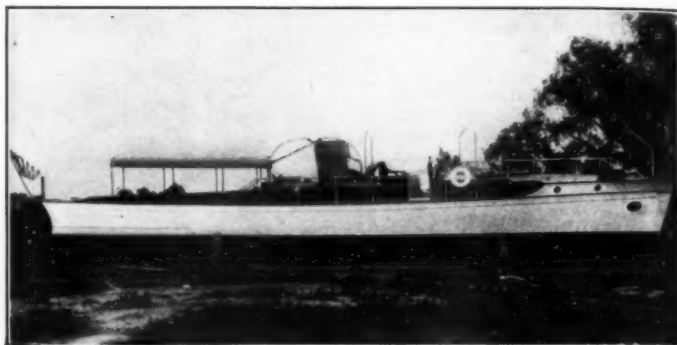
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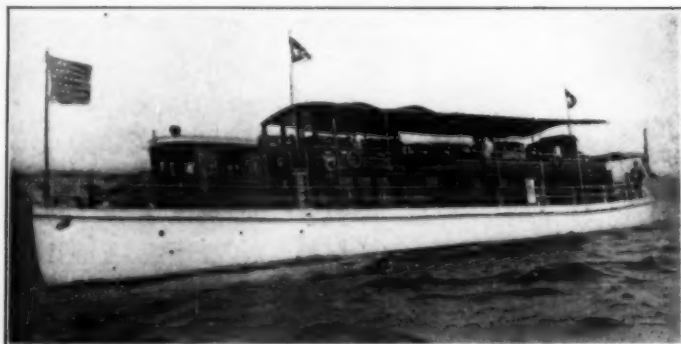
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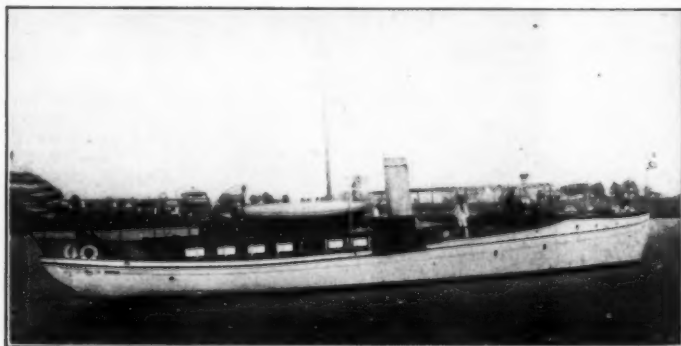
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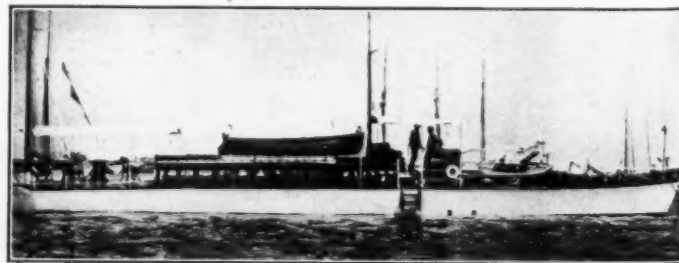
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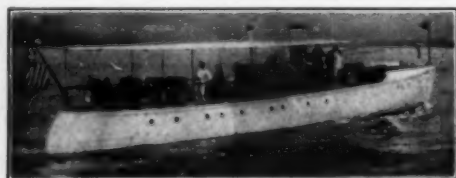
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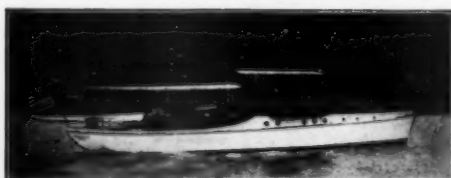
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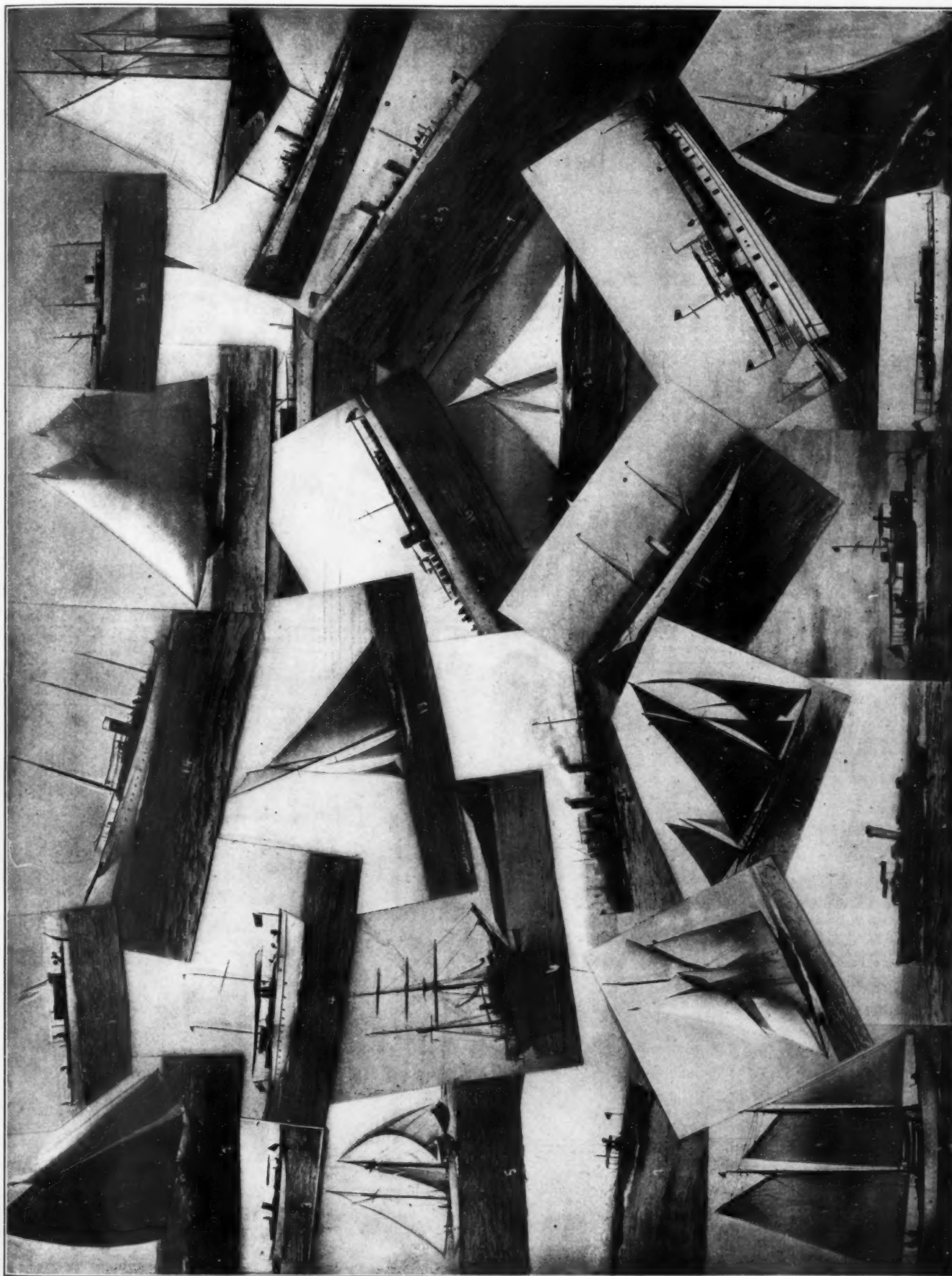
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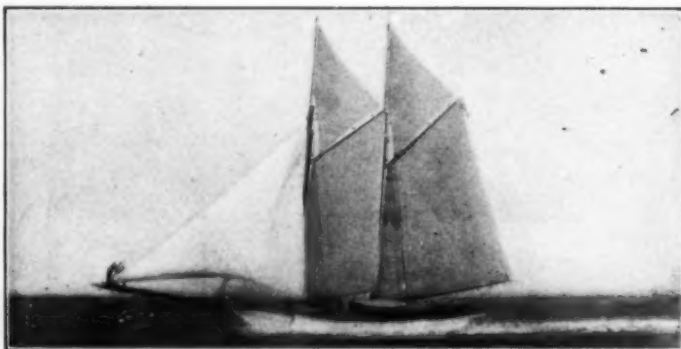
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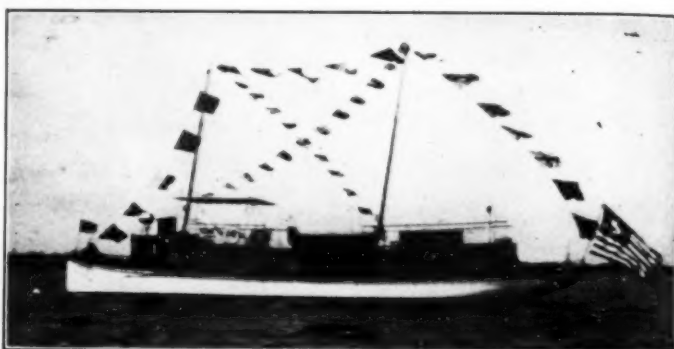
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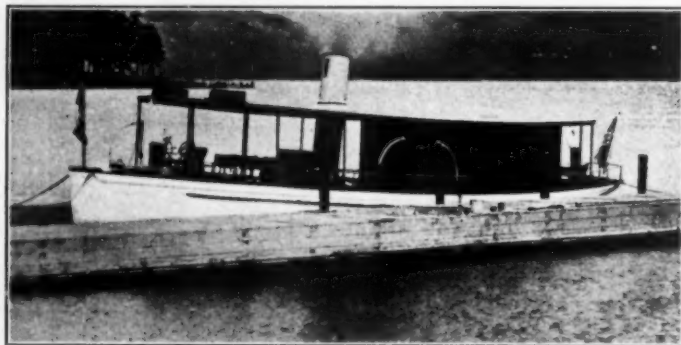
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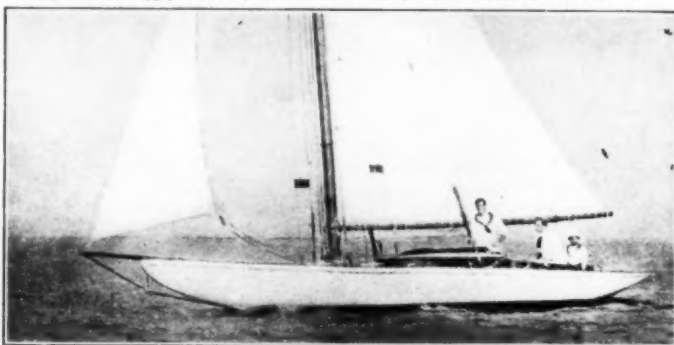
No. 1066.—For sale; Centreboard auxiliary schooner yacht; 80 ft. over all; 65 ft. water line; 18 ft. 6 in. beam; 6 ft. 10 in. draft; 17 tons lead; four staterooms; large saloon; crew's quarters; two boats; good sea boat; 22 H. P. engine; three years old; 1907 rebuilt; has had best of care; purchased very reasonably. For full particulars apply Tams, Lemoine & Crane, 52 Pine Street, New York.



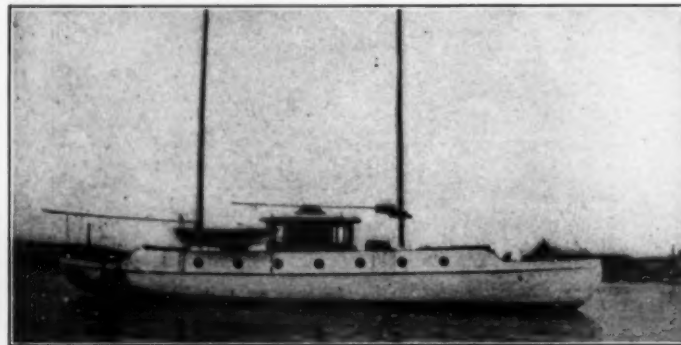
No. 7170.—For sale—Motor yacht 68 ft. over all; 61 ft. water line; 12 ft. 2 in. beam; 4 ft. 5 in. draft; built 1900; 50 H. P. motor; speed better than 10 miles; excellent condition; has a most complete equipment; sleeping accommodations in owner's quarters for six; bathroom; finished inside and outside in mahogany. For full particulars apply to Tams, Lemoine & Crane, 52 Pine Street, New York.



No. 6500.—For sale—Steam yacht, on Lake George; 65 x 57 ft. x 10 ft. 6 in. x 3 ft. 6 in.; built Seabury, 1903; triple expansion engines; Seabury boiler; cockpit forward; standing roof; aft is boiler and engine room, then after cabin, toilet room and galley; ideal boat for use on a lake; well constructed; in good condition. Apply to Tams, Lemoine & Crane, 52 Pine Street, New York.



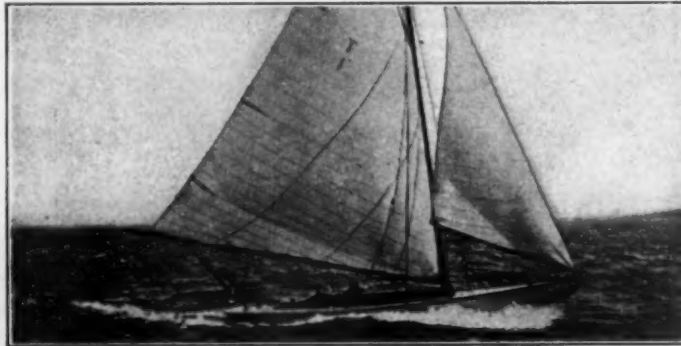
No. 2522.—34 ft. 6 in. x 23 ft. 4 in. x 7 ft. 3 in. x 5 ft. 6 in.; fast sloop, in excellent condition, is an unusual opportunity; five thousand pounds lead; two transoms; has a toilet under transom; Champion class Q, 1905; not raced 1906, 1907, 1910, heavily constructed. Large equipment boats, including launch. Unusual ac- by Tams, Lemoine & Crane from whom full particulars can be had.



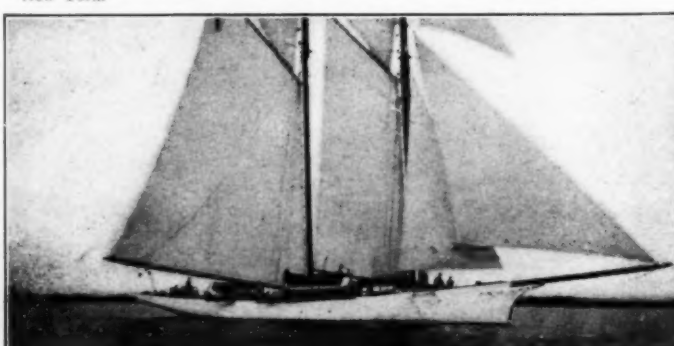
No. 7523.—For sale at a low figure; motor yacht, 66 ft. over all; 56 ft. water line; 13 ft. 6 in. beam; 4 ft. 2 in. draft; has after and forward saloons, each having four berths in addition to stateroom, galley, two toilet rooms and comfortable crew's quarters; unusually able boat. For full particulars apply to Tams, Lemoine & Crane, 52 Pine Street, New York.



1856.—Houseboat on St. Lawrence, for sale and charter; 80 ft. over all; 76 ft. water line; 16 ft. beam; 3 ft. 6 in. draft; four staterooms; bathroom; large saloon; 7 ft. 6 in. headroom; lighted by acetylene; well fitted out; most complete equipment; two launches; one 32 ft. semi-speed boat; speed 18 miles; other 24 ft. boat, making 10 miles; has two other boats. Apply to Tams, Lemoine & Crane, 52 Pine St., New York.



No. 2226.—Well known raceabout, 34 ft. 5 in. x 30 ft. 6 in. x 8 ft. 8 in. x 4 ft.; designed by Crane, build Wood, 1907; absolutely perfectly kept up; complete equipment of sails; everything excellent condition; 3,000 pounds lead; good sized cockpit; trunk cabin; raced 1907, winning 6 firsts out of 12 starts; can be purchased reasonably. Full particulars apply to Tams, Lemoine & Crane, 52 Pine Street, New York. Please mention MOTOR BOATING.



No. 1016.—Able schooner yacht, 97 ft. over all; 85 ft. water line; 22 ft. beam; 8 ft. 6 in. draft; in excellent condition; overhauled last summer; five staterooms; one double; large saloon; complete equipment of boats; fully found for cruising; can be purchased for a very low figure. For full particulars apply to Tams, Lemoine & Crane, 52 Pine Street, New York.

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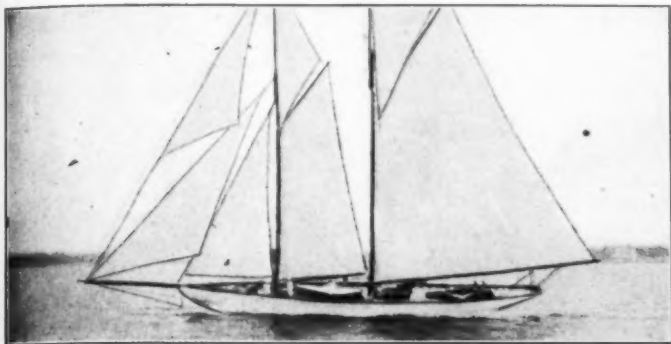
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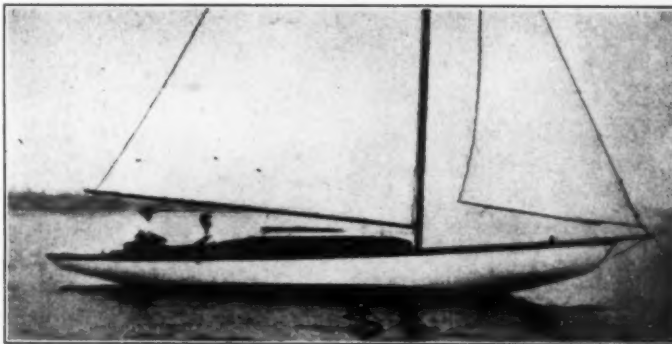
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Offer for sale and for charter all the available steam yachts, auxiliaries, motor boats, houseboats and sailing yachts in this country and abroad.



No. 4543.—Well-known cruising auxiliary schooner, fast and able. 89 x 62 x 18.3 x 8.5. Built 1902; 25 tons lead outside, 1,000 lbs. inside. 25 H. P. Standard motor. Sails good. Two single, one double room. Saloon with two berths. Complete equipment. In very best possible condition throughout. For full particulars apply to Tams, Lemoine & Crane, 52 Pine Street, New York.

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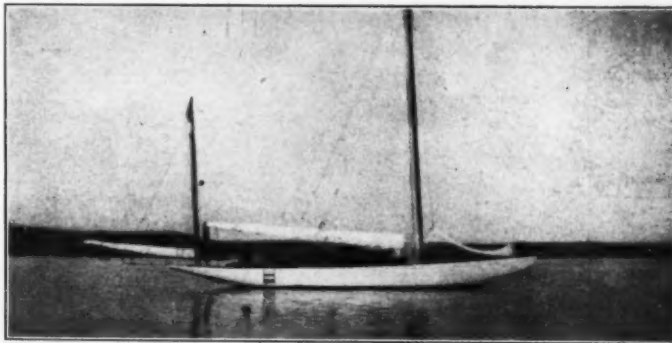
No. 2273.—Keel sloop, well constructed. Built 1906. 31 x 18 x 7.6 x 5. Very fast and able. Two full suits of sails. 2,500 lbs. lead. Cabin with two berths. Dinghy. Most complete equipment, including cooking utensils, blankets, dishes, etc. Unusual opportunity. Can be purchased for low figure. For full particulars apply to Tams, Lemoine & Crane, 52 Pine Street, New York.

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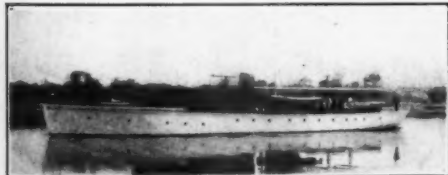
No. 1804.—Steam houseboat. 100 x 92.3 x 23.4 x 6. Designed by Crane. Built 1901, heavily constructed. Large equipment boats, including launch. Usual accommodations, consisting six staterooms, two bathrooms, saloon, three toilet rooms, sitting room on deck, headroom 6.6. Compound engine, 8 in. and 16 in. stroke. 13 in. Almy boilers. Eight knots. For full particulars apply Tams, Lemoine & Crane, 52 Pine Street, New York.

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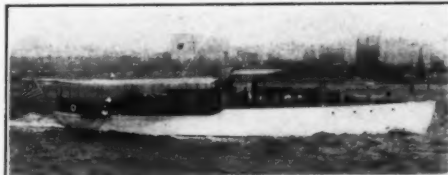
No. 4067.—For sale, keel yawl 51 ft. over all, 33 ft. waterline, 12 ft. 3 in. beam, 7 ft. draft. Cary Smith design. Built 1904. Stateroom, saloon, galley, two toilets and crew's quarters. Excellent condition. Has 15,600 lbs. of lead. Room in lazarette for motor, 6 ft. 3 in. headroom. Nicely finished white enamel and mahogany. For full particulars apply to Tams, Lemoine & Crane, 52 Pine Street, New York.

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No. 7999.—Fast twin-screw Craig engine; good accommodations; reasonable price.

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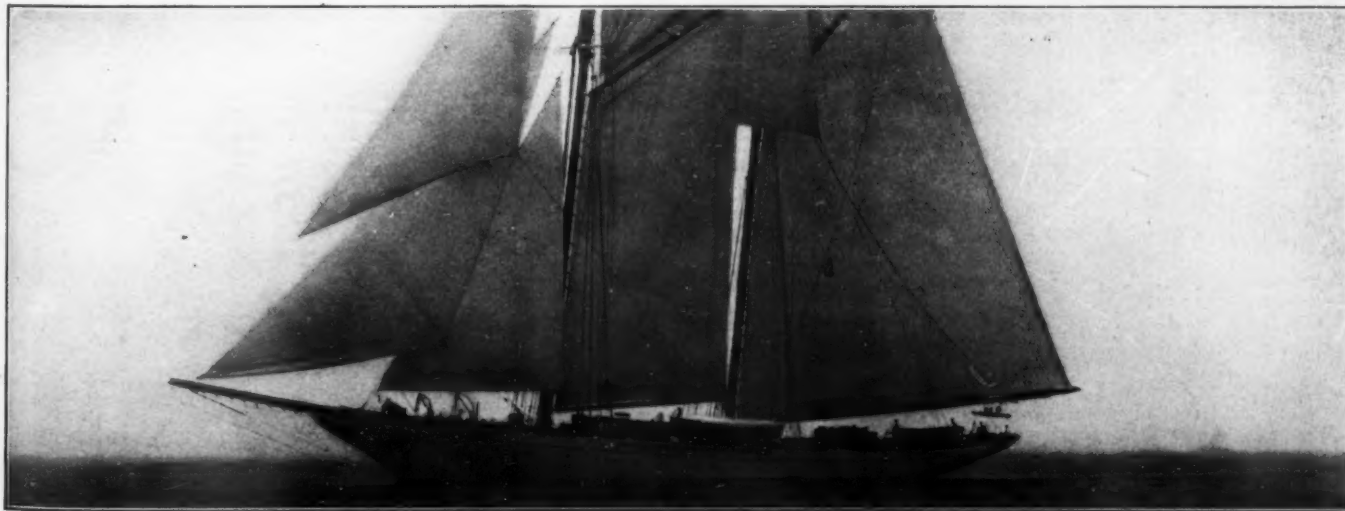
No. 7905.—83 x 14; able cruiser, new 1910; Standard engine; low figure.

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No. 7538.—Fast cruiser, built 1909; Craig engine; attractive price.

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No. 210.—For sale—steam auxiliary schooner yacht, 160 ft. over all, 120 ft. waterline, 28 ft. beam, 16 ft. draft. Built 1903. Six staterooms, 3 bathrooms, saloon. Compound engines, two boilers, complete electric light plant. Speed 10 knots. Excellent condition. For full particulars apply to Tams, Lemoine & Crane, 52 Pine Street, New York.

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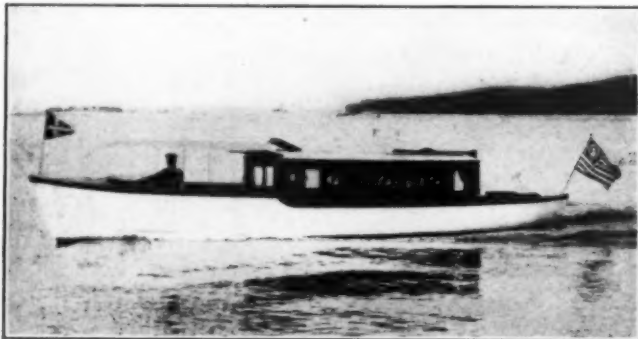
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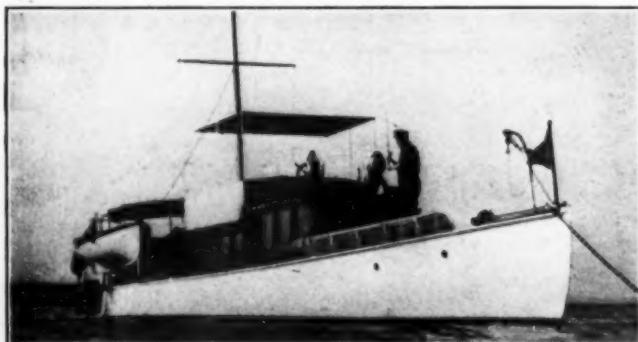
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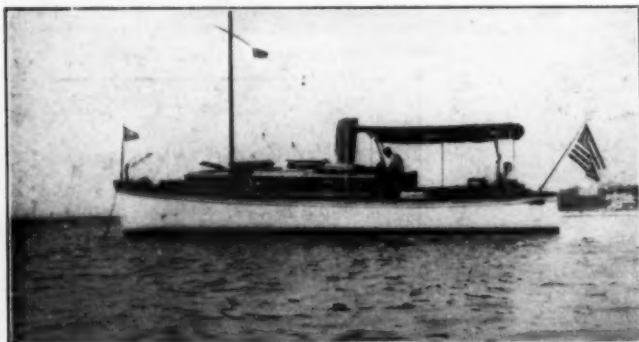
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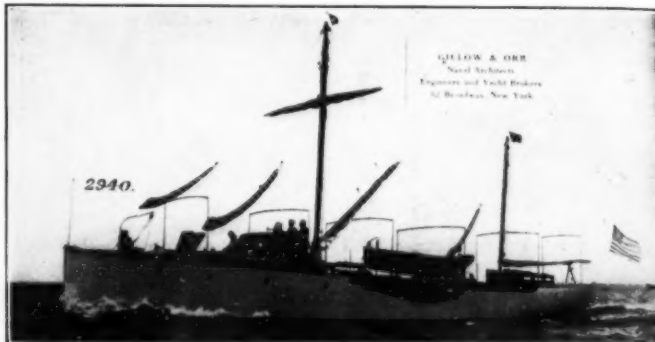
No. 94.—For Sale—owner going abroad—74 ft. 16-mile cruiser; forecabin, double stateroom with toilet, main saloon with sideboard, two Pullman berths, toilet room, etc.; engine room, galley; large after and bridge decks; fine electric outfit; 6-cylinder, 100 H. P. engine; excellent seaboat; outfit includes launch, dinghy and complete cruising equipment. Seen New York. Plans, price, etc., Gielow & Orr, 52 Broadway, New York.



No. 914.—For Sale—Hunting cabin cruiser, 40 x 10 x 3.4 ft.; one of the best seaboats of her size; in first-class condition; one-man boat; steers from cockpit; 10 ft. 6 in. long, and all engine controls next to steering wheel; two toilets, galley, ice box, etc.; engine room partitioned from cabin; engine, 4-cylinder, 25 H. P. Buffalo; electric lights and running water; double stateroom and two transoms in cabin; headroom 6 ft. 4 in. Price and further particulars, Gielow & Orr, 52 Broadway, New York.



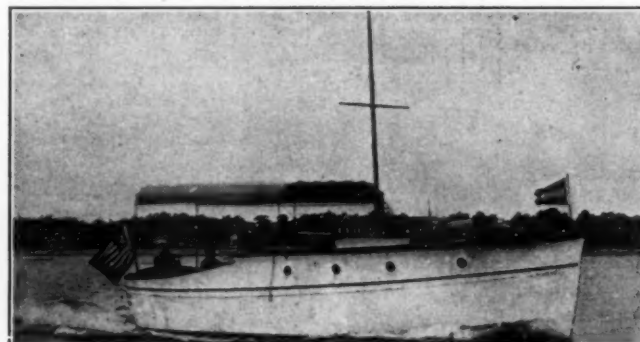
No. 3270.—For Sale (owner wishes to get larger boat)—Fast, raised-deck cruiser, 32 ft. O. A., 5 ft. 6 in. beam, 22 in. draught; speed 13 miles; can do better; built spring 1910; engine, 25 H. P., in perfect condition; cabin finished in mahogany and white; has running water and twelve 16 C. P. electric lights; toilet forward, galley and berth in engine room. Price reasonable. Gielow & Orr, 52 Broadway, New York.



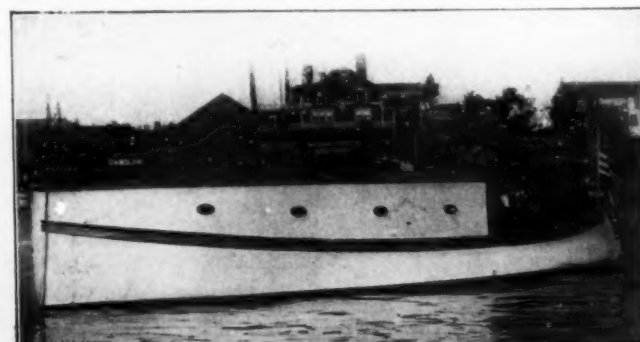
No. 2940.—For Sale—Seagoing, twin-screw power yacht; ketch rig; 74 x 67 x 13.4 x 5.9 ft. draught; speed 11.5 knots; built 1909; unusually heavy construction; interior finished in African mahogany; large main saloon. Three double staterooms, bathroom, three toilets, galley, engine room and forecabin; two 125 H. P., 4-cylinder, 4-cycle engines; gasoline capacity 1,000 gallons; independent engines for electric dynamo; completely found for cruising, including small piano. Price, etc., Gielow & Orr, 52 Broadway, New York.



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No. 3207.—For Sale by Estate—Raised-deck cruiser, 35 x 8 x 3 ft. draught; built 1910 for New York-Marblehead race, but not completed in time to compete; strongly constructed, good seaboat, flare bow. Forward is toilet room with two side and two full length hanging lockers. Next is main cabin with two locker berths, the backs swinging up, giving four berths in cabin. Next aft is engine room with galley and large locker for oilskins, etc. Large cockpit, teak paneled; reverse lever and auto steering wheel; engine, 6-cylinder, 4-cycle; elaborate electric light outfit; boat little used. Gielow & Orr, 52 Broadway, New York.



No. 3081.—Sacrifice—Cruising launch, 35 x 8.6 x 3.6 ft. draught; cabin 12 ft. long; 6 ft. headroom; toilet and lavatory; Bridgeport engine, 14 H. P. Further particulars, Gielow & Orr, 52 Broadway, New York.

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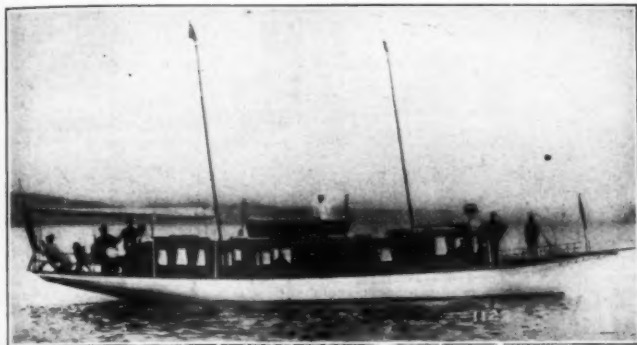
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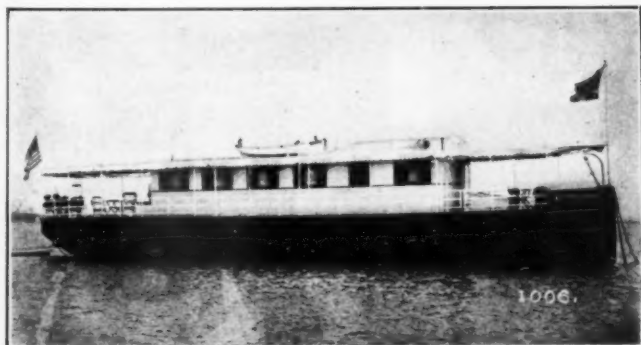
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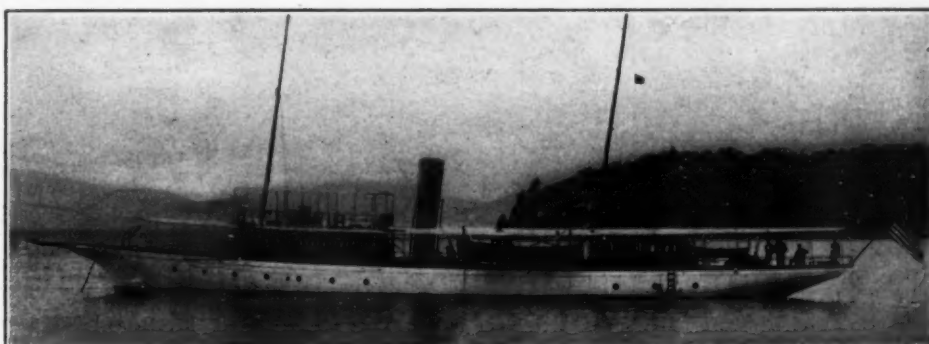


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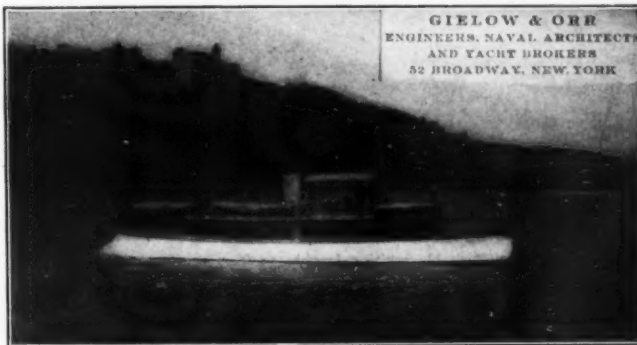


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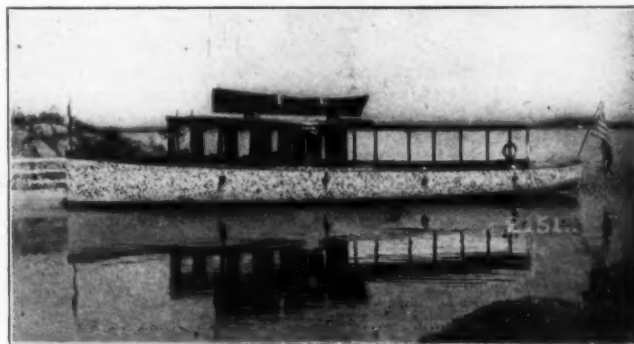
No. 108. For Sale or Charter—Attractive prices. Fast, flush deck, cruising, steel steam yacht, 150 ft. over all, 129 ft. waterline, 17.8 ft. beam, 7.5 ft. draught. Speed 14 to 17 miles. Two deck houses, social hall and companionway to owner's and guests' quarters in forward one, dining room and steward's pantry in after one. Shelter seat on main deck at after end of forward house. Below forward is bath room, followed by single stateroom with passage leading aft to lobby. To starboard of passage is single stateroom with berth, bureau, washbowl and fixed seat. To port is large wardrobe and a toilet room. Next aft is another single stateroom to starboard and companionway, lockers, etc., to port. Aft again is owner's room, full width of yacht, with double berth and enclosed bath room, large wardrobe, also single berth, sofa and dresser. Machinery space follows, containing two water-tube boilers, quadruple expansion engine, and auxiliary machinery. Then comes galley full width of yacht, officer's stateroom, and messroom, and crew's quarters furthest aft. Interior attractively furnished and finished in mahogany. Thoroughly equipped for cruising. Outfit includes launch, gig, dinghy, etc. Yacht economical to operate and well kept up. Price, plans and further particulars from Gielow & Orr, 52 Broadway, New York.
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No. 2,402. For sale at low price—Light draught cruising motor yacht, 65 ft. over all, 12 ft. 4 in. beam, 3 ft. 6 in. draught. Pilot house, trunk cabin, flush deck aft, bridge deck over cabin. Interior finish, solid mahogany. Two berths each in pilot house and main saloon, large stateroom with double bed, toilet room; engine room with crew's accommodation galley in after end of cabin trunk. Electric light dynamo and batteries. Large gasoline and water tanks. Gasoline launch and dinghy. Awnings, anchors, cables, etc., and cruising outfit. Located New York. Price, etc., from Gielow & Orr, 52 Broadway, New York.



No. 2,157. For Sale—Fast half cabin launch, 40 x 8 x 3.4 ft. draught. Speed 13 miles. Always had the best care; absolutely in good condition. Decks mahogany, also interior and exterior of cabin. Narrow deck around entire boat. Cabin fitted with deep glass windows, is attractively furnished. Sliding door separates cabin from cockpit. Engine 25 H. P., 4 cylinder is near forward end of cockpit. Price and particulars, Gielow & Orr, 52 Broadway, New York.

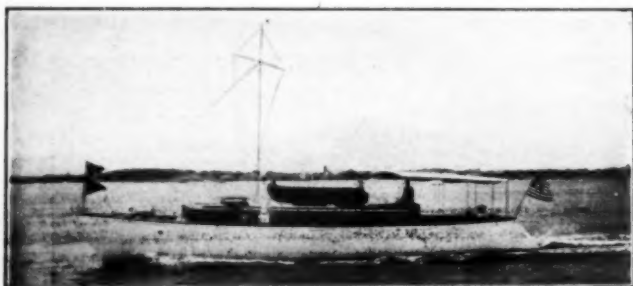


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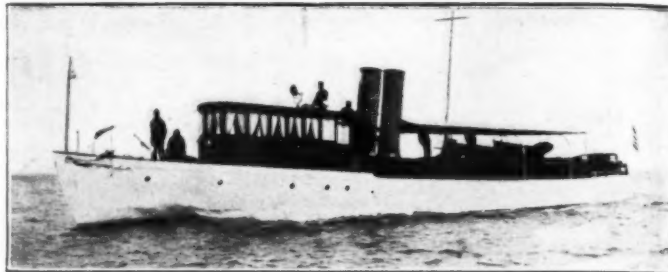
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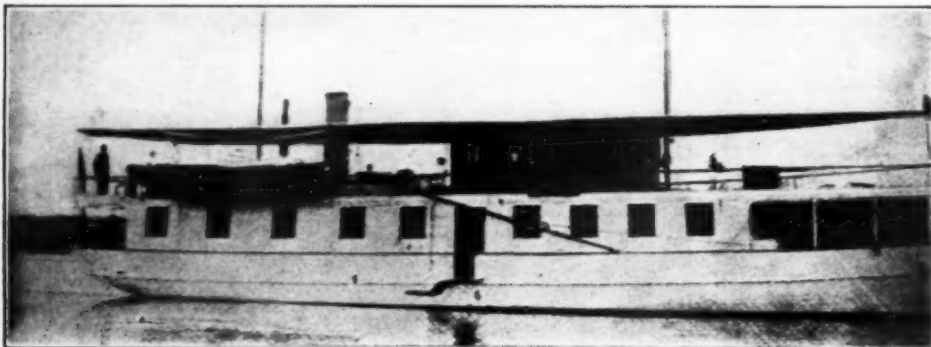
No. 2319.—For sale; price attractive; twin screw express steam yacht; speed up to 20 miles; 110.6 x 104 x 14 x 4 ft draught; crew and galley below forward; deck house contains dining saloon and toilet room; aft are two staterooms with double berths; single stateroom, bathroom and main cabin with transoms, etc.; large observation bridge and after deck; fully equipped; owner cannot use; wants offer. Plans, additional particulars and price from Gielow & Orr, 52 Broadway, New York.



No. 1074.—For sale; desirable cruising launch, 56 x 12 x 3 ft. draught; hull copper fastened; pilot house, forward and after cabins; finished in selected mahogany; electric lights, galley, enclosed toilet, etc.; engine 32 H. P., 4 cylinder 20th Century; decks, hull and engine are in perfect condition; after deck seats 10 people; complete inventory. Full particulars, Gielow & Orr, 52 Broadway, New York.



No. 686.—For sale; bargain; twin screw motor yacht, 75 x 64 x 14 x 3.6 ft. draught; speed 12 miles; two 25 H. P. Standard engines; interior finish finest mahogany and white; headroom 6.4 ft.; forward saloon with four extension berths; double and single staterooms, bathroom, galley, crew's toilet, engine room, and after saloon with two extension berths; sleeping nine or more in owner's party; well built; A 1 condition; handsome, roomy, able craft; bottom copper sheathed; large water and gasoline capacity; complete cruising equipment; all in fine order; now in commission; exceptional opportunity. Plans and further particulars from Gielow & Orr, 52 Broadway, New York.



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No. 3225.—For sale; price attractive; desirable bridge deck cruiser; 40 x 35 x 8 x 3.3 ft. draught; engine 25 H. P., 4 cyl. 4 cycle; speed 10 miles; well built; copper fastened; two cabins, sleeping four; 6 ft. headroom; toilet; mahogany trunks; varnished decks. Full particulars from Gielow & Orr, 52 Broadway, New York.



No. 2611.—For sale; offer wanted; twin screw, cruising motor yacht, 72 x 68.4 x 12.6 x 3.3 ft. draught; speed 12 miles; two four cylinder, four cycle 40 H. P. engines; pilot house, with two transoms; forward end of after trunk contains stateroom and toilet room, followed by main cabin, 14 ft. long with four transom berths, sideboards, lockers, etc.; crew's quarters below forward and in engine room; latter is under bridge deck, next aft below, being the galley; full width of the yacht, with stairway leading up to passage, which latter leads forward to bridge deck and aft to main saloon; bridge deck 13 ft. long and after deck 18 ft. long; large deck room; side decks 12 ins. wide; outfit includes gig, dinghy, anchors, awnings, carpets, cushions, curtains, furniture, etc.; constructed of the best materials and in best possible manner; copper and bronze fastenings; mahogany pilot house and trunk cabin; planksheer, doors, stairways, gangway, etc.; brass or bronze deck plates, chocks, cleats, awning stanchions, deck rail, steering wheel, etc.; copper gasoline tank under after deck, 320 gallons; boat must be seen to be appreciated; exceptional opportunity, as owner is most anxious to sell. Price, plans, etc., from Gielow & Orr, 52 Broadway, New York.

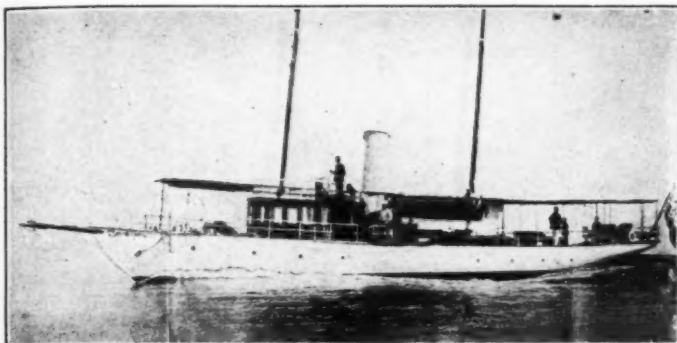
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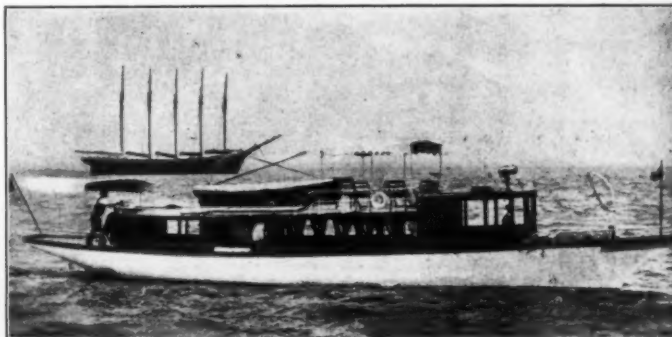
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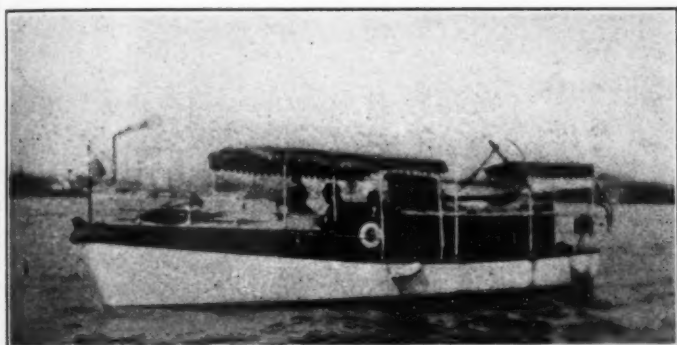
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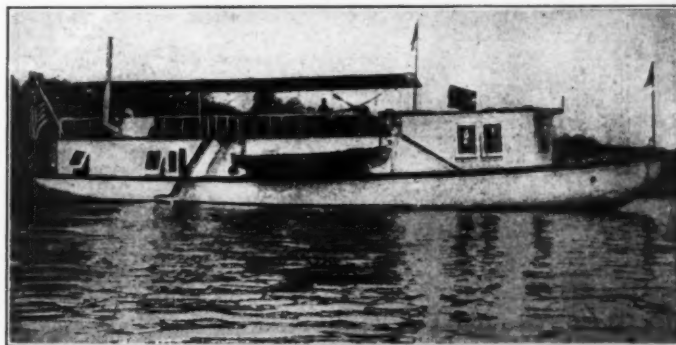
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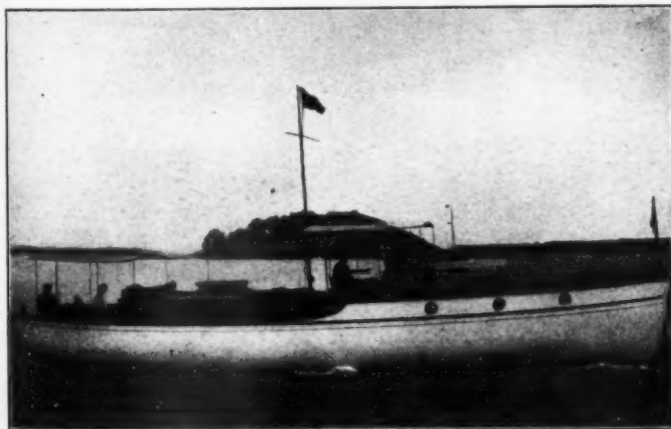
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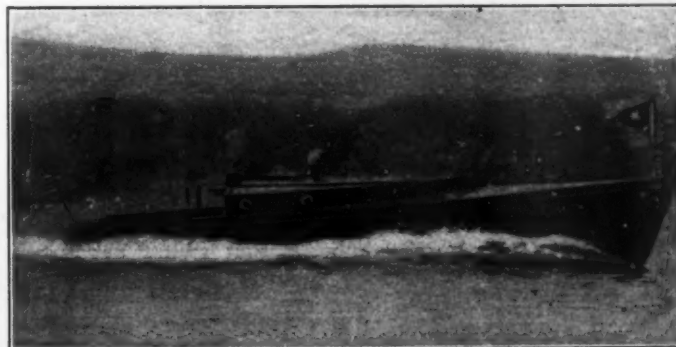
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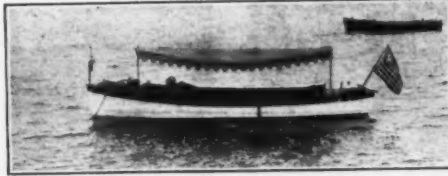
No. 993.—Bargain; 55 x 11 ft.; raised deck cruiser; speed 11 to 13 miles.
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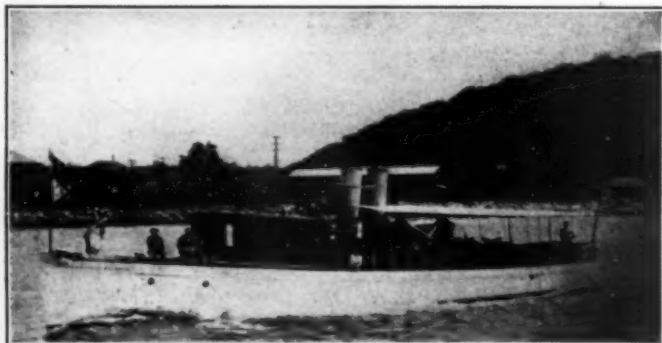
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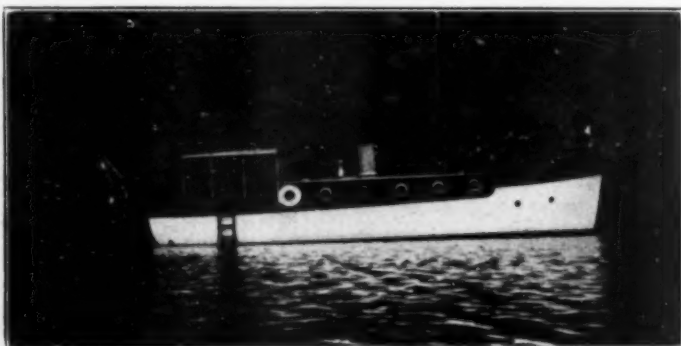
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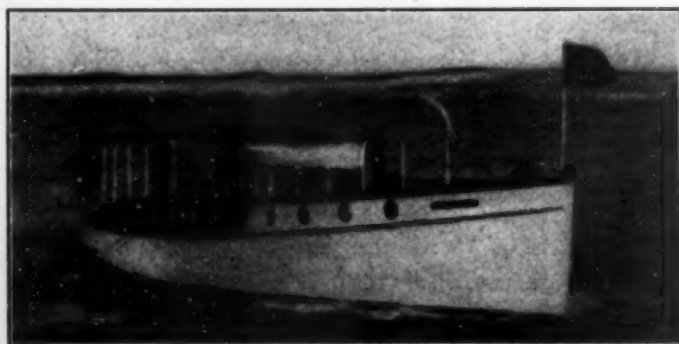
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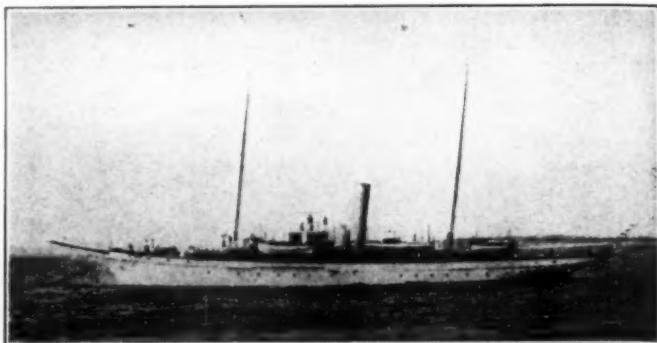
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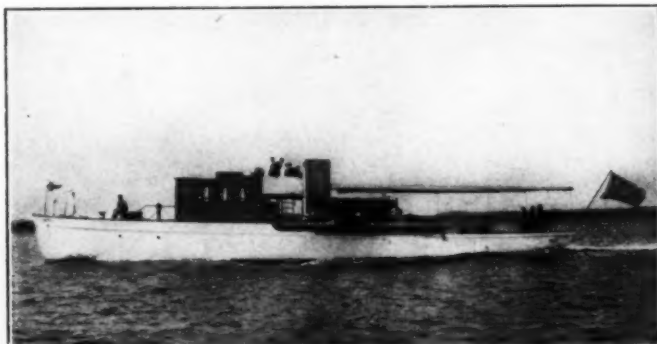
No. 5173.—Raised deck trunk cabin cruiser, 39 x 9.3 x 3.6, built 1909. Standard motor. Further particulars from Frank Bowne Jones, Yacht Agent, 29 Broadway, New York.
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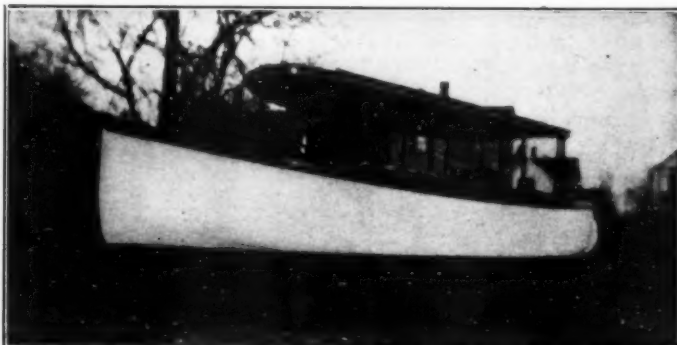
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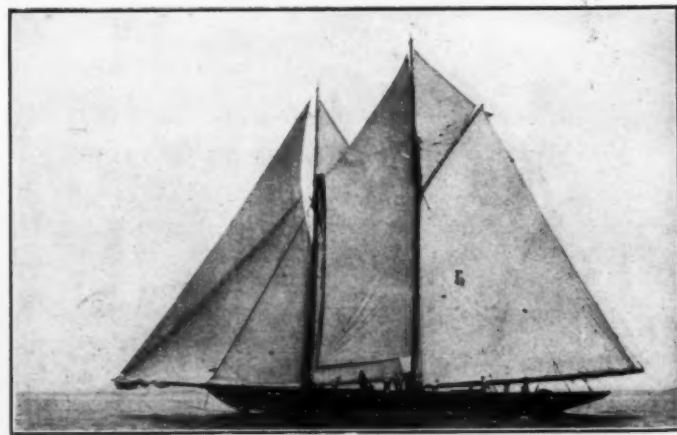
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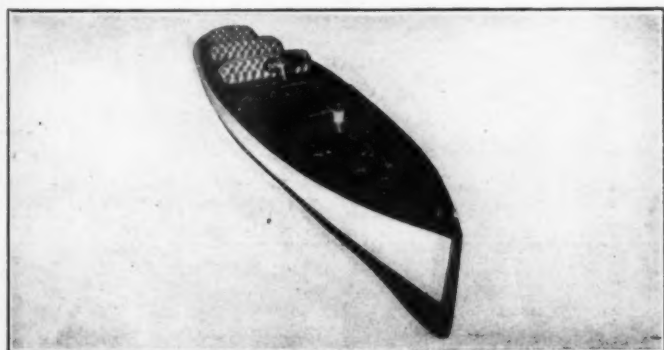
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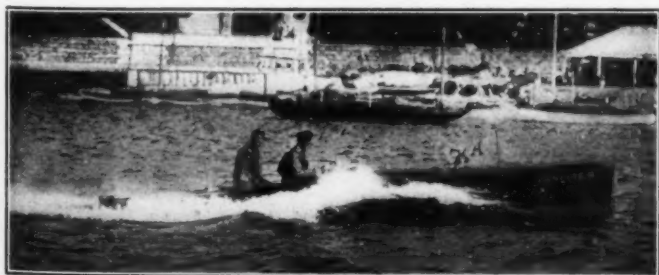
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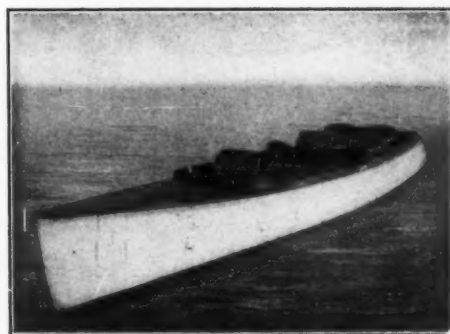
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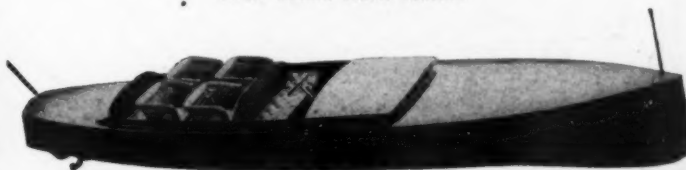
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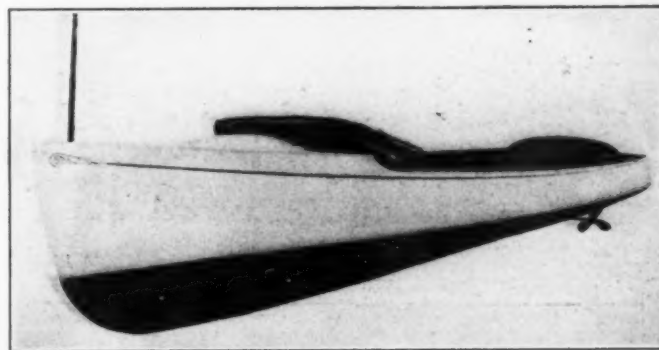
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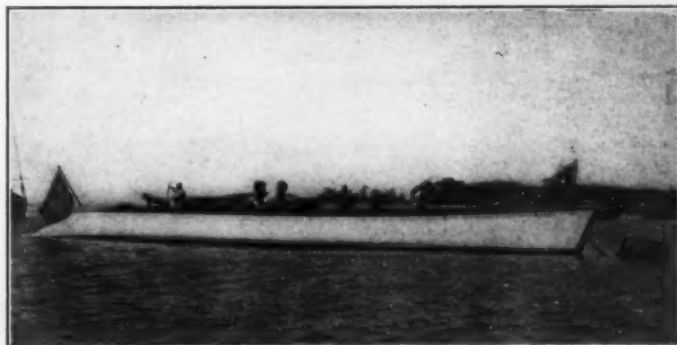
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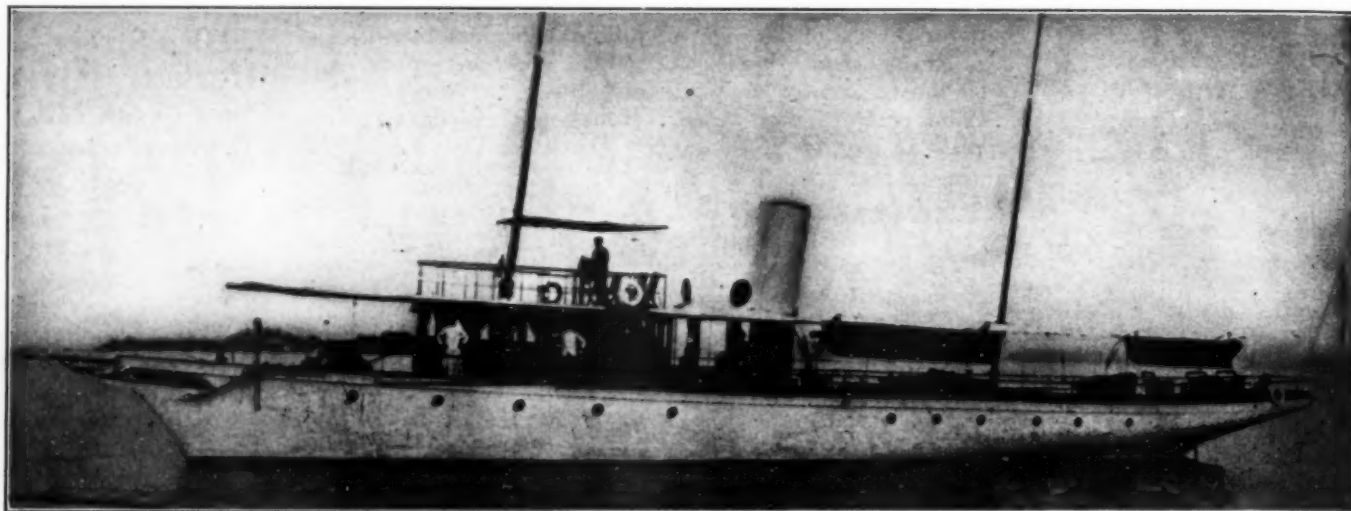
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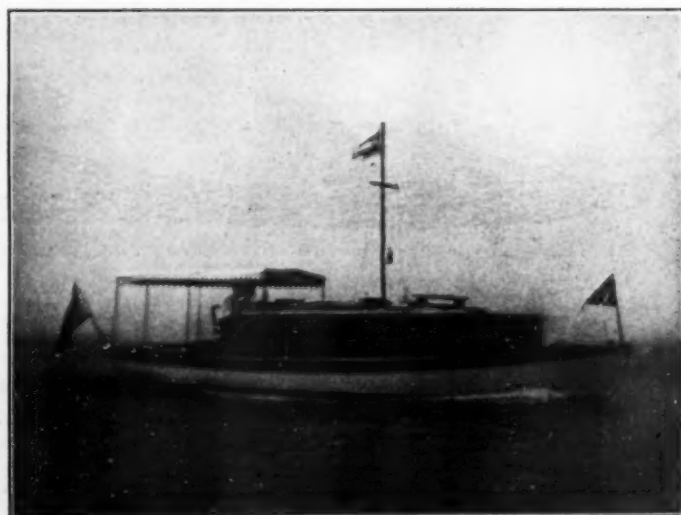
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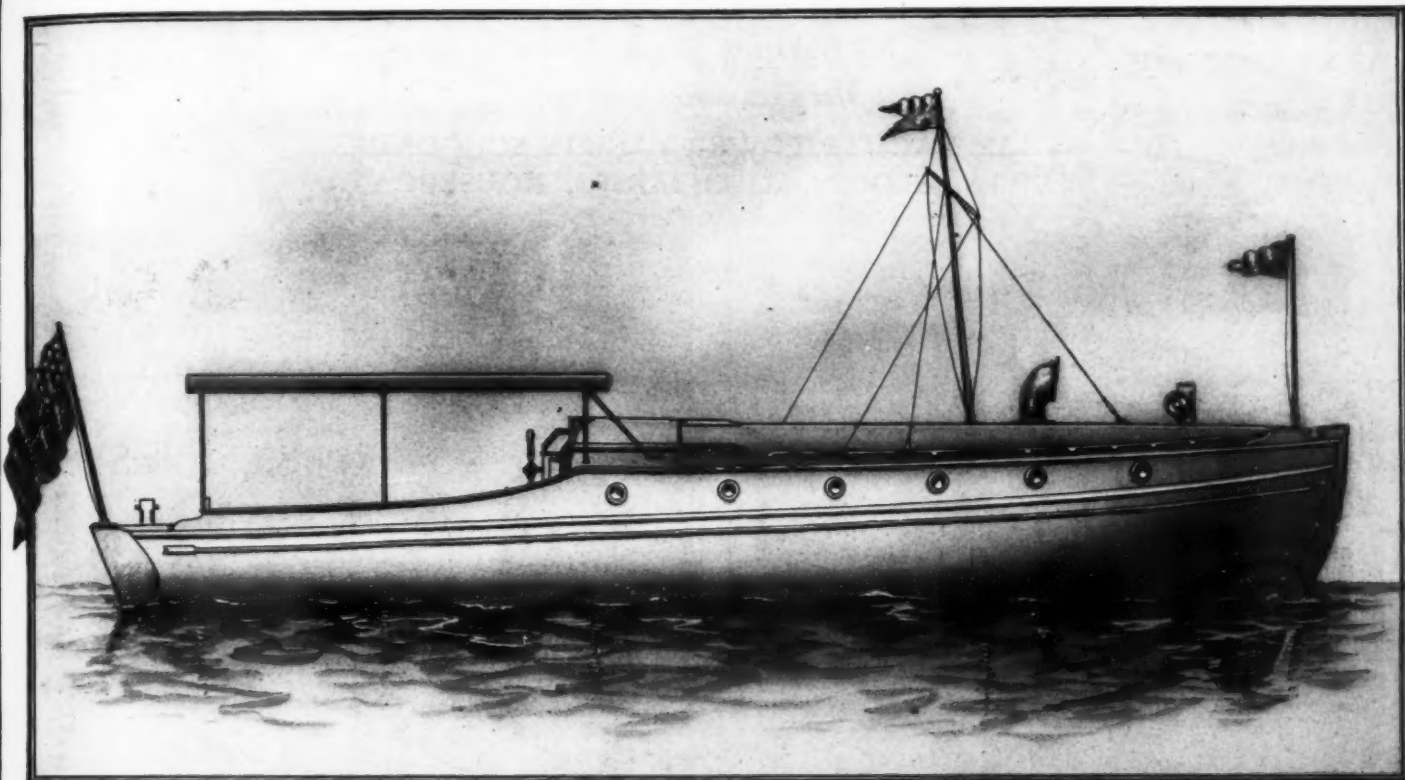
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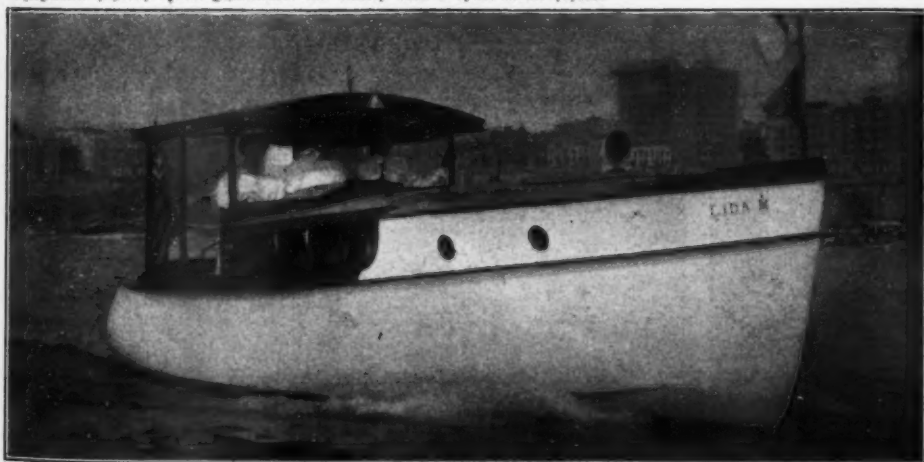
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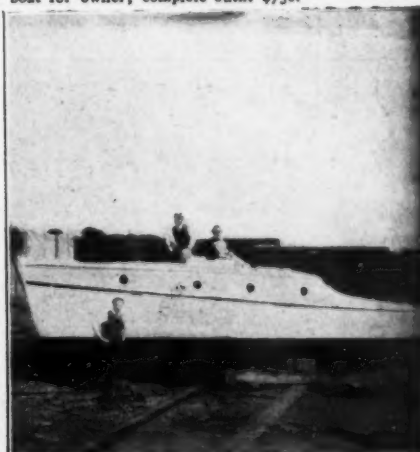
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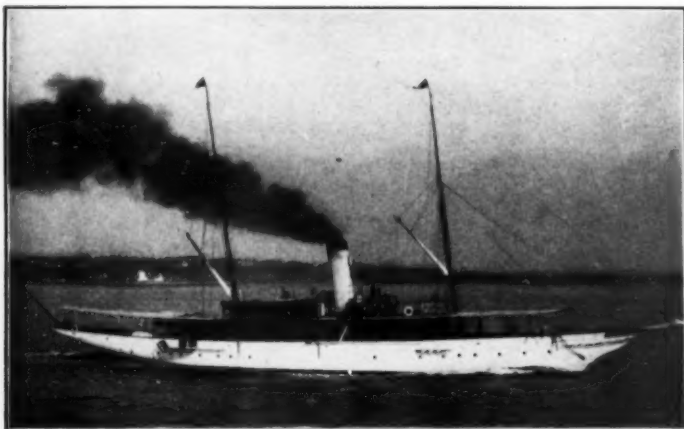
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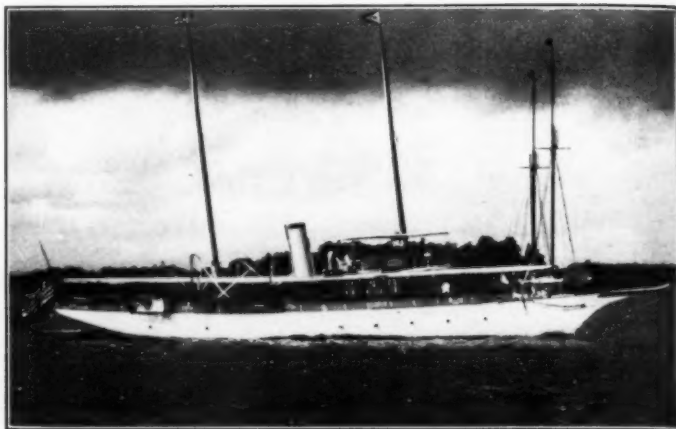
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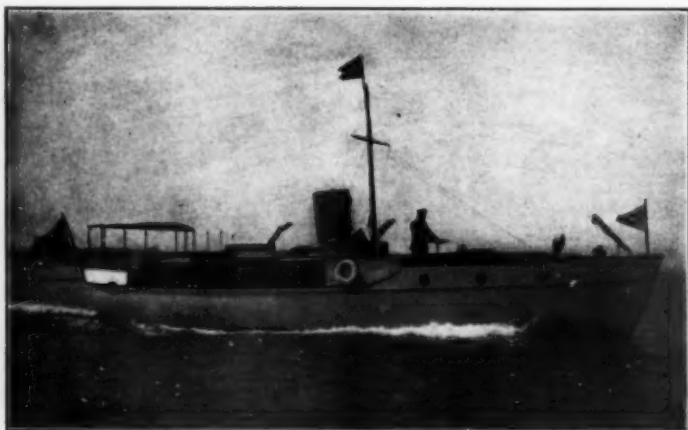
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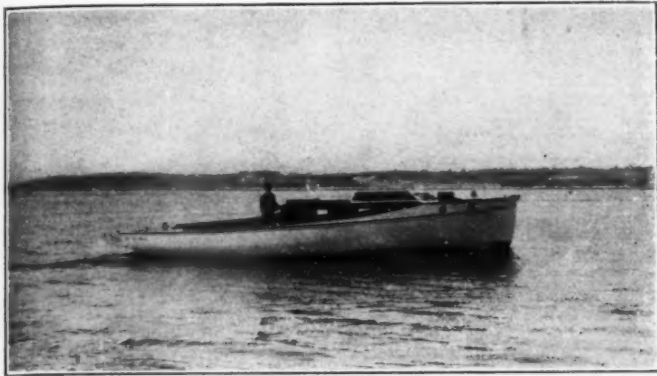
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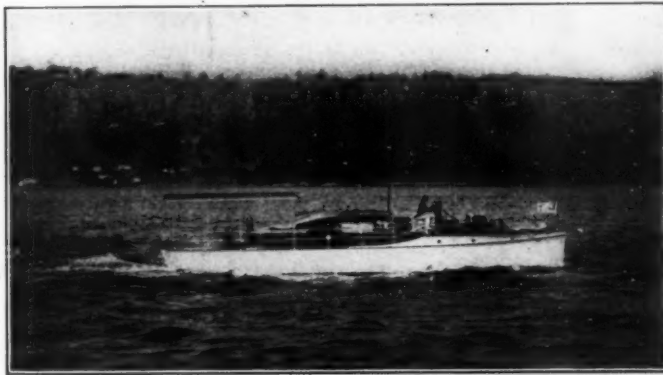
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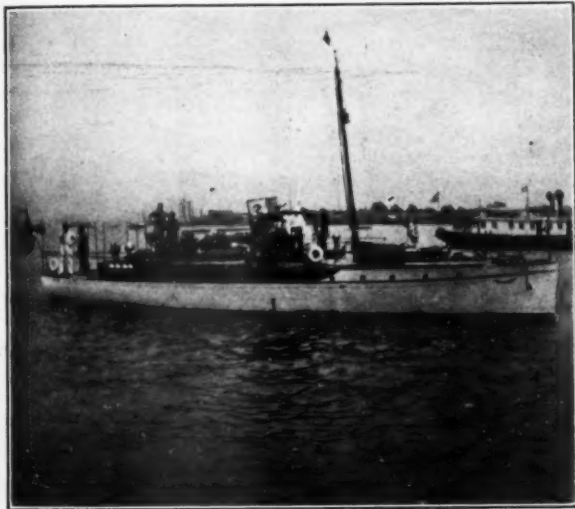
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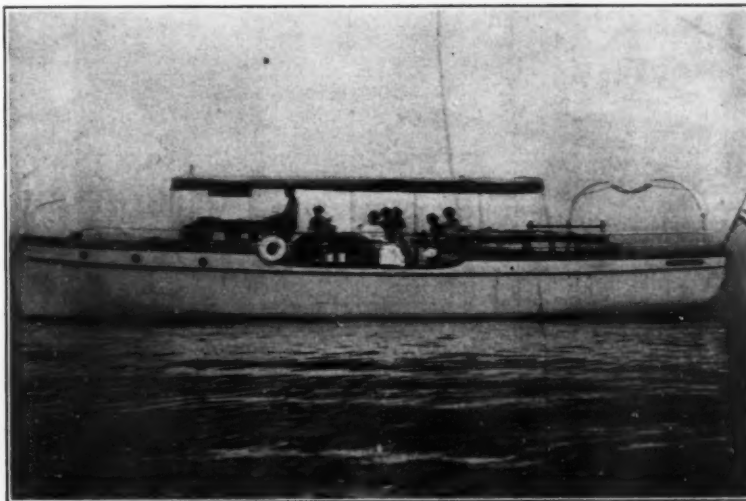
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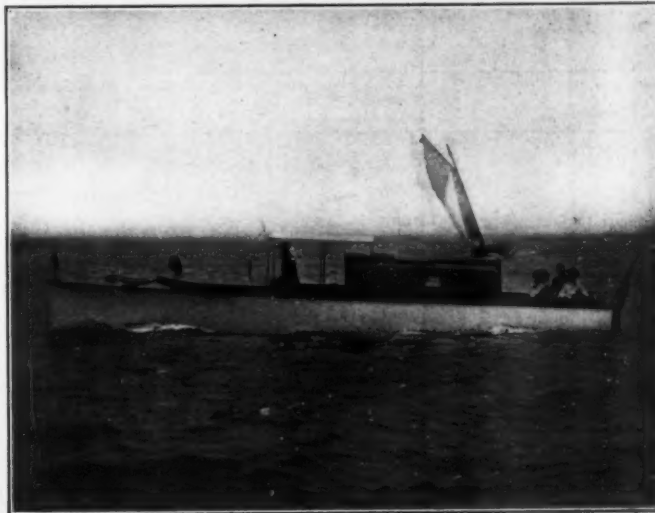
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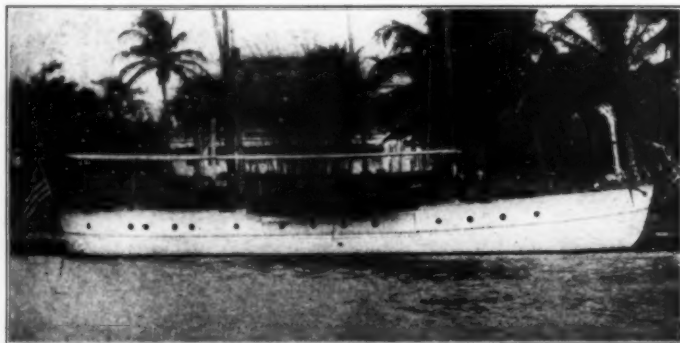
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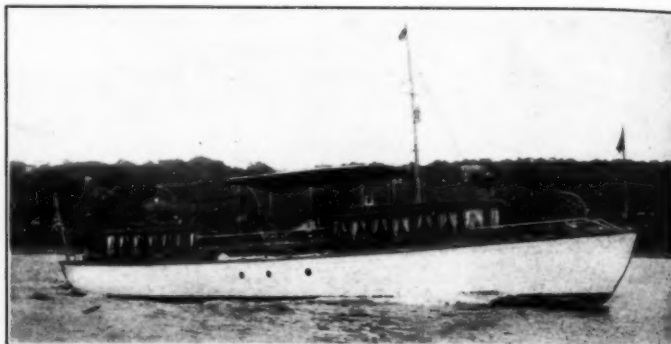
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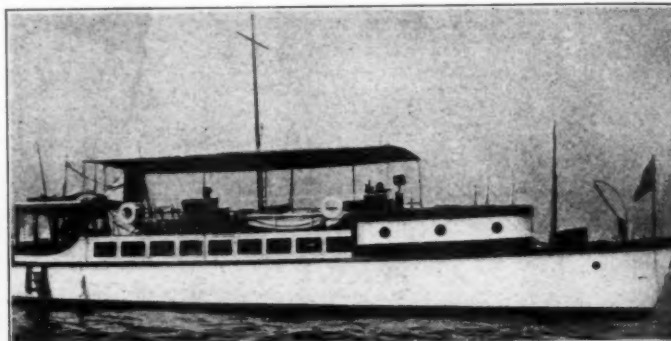
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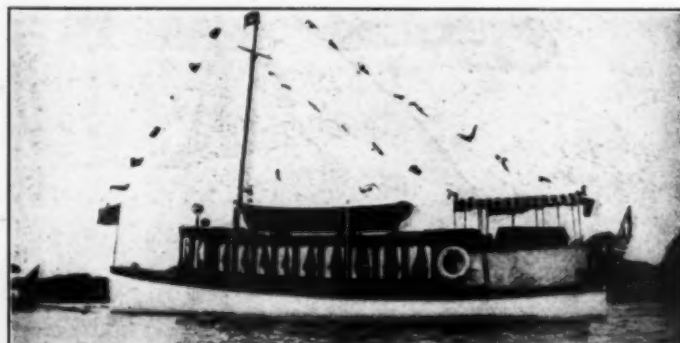
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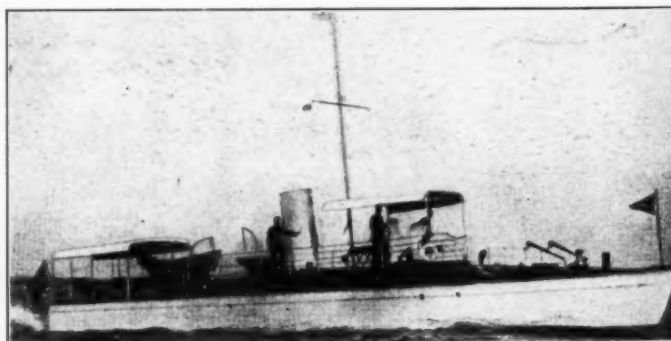
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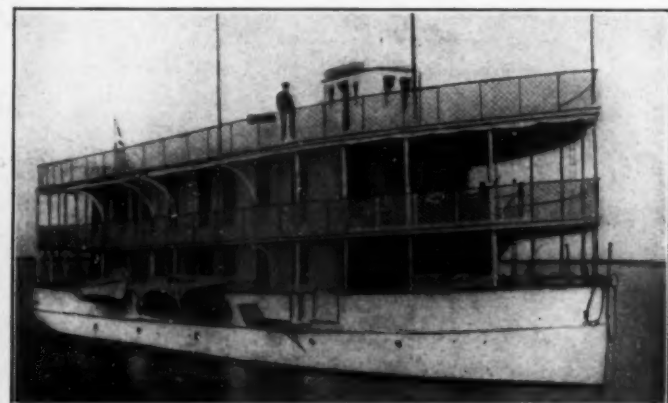
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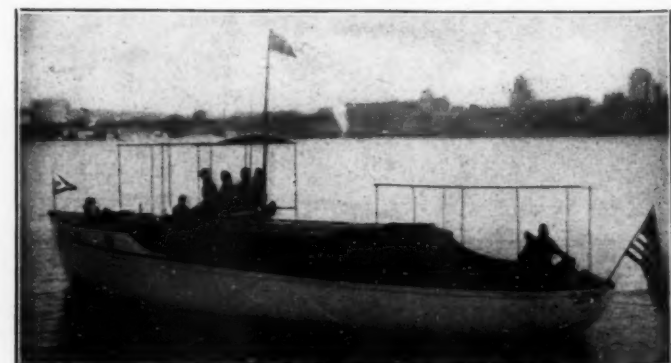
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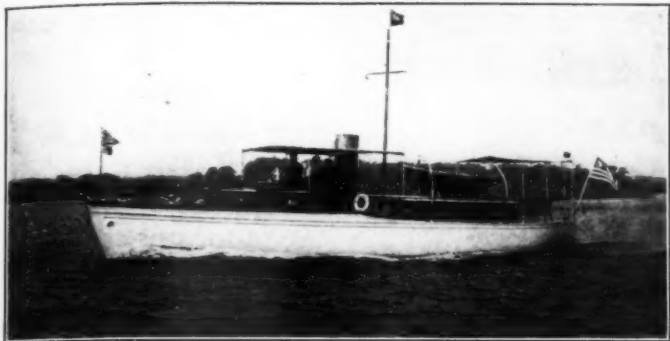
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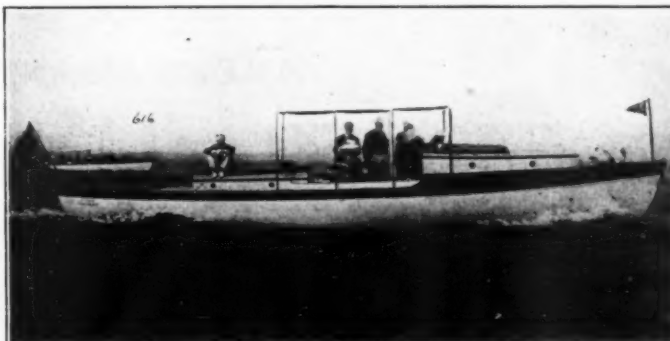
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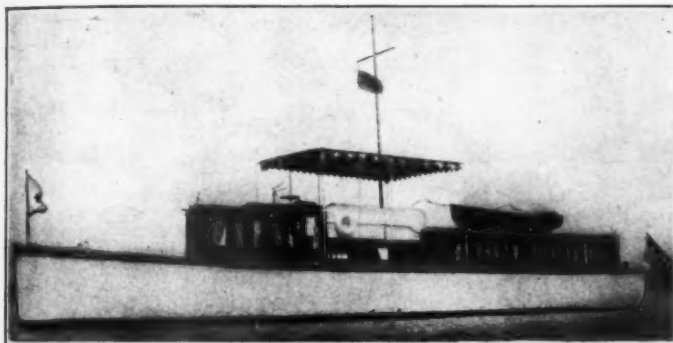
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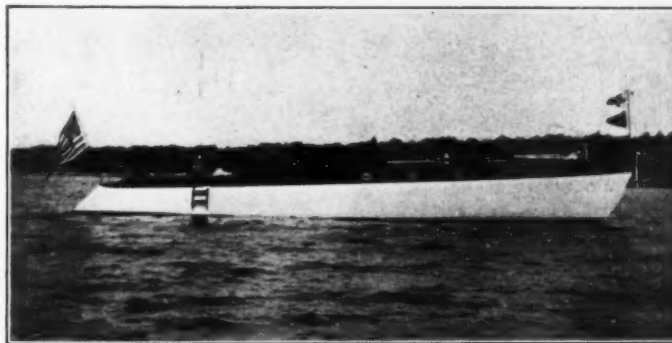
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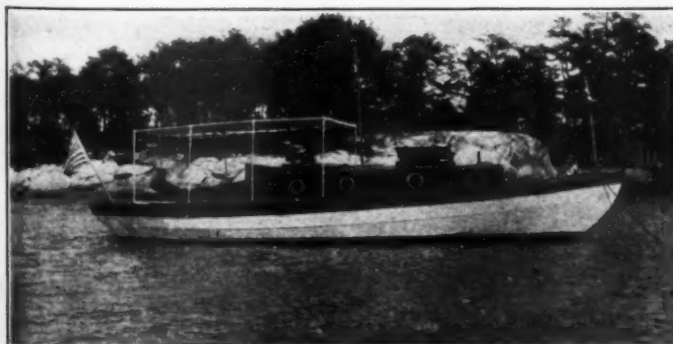
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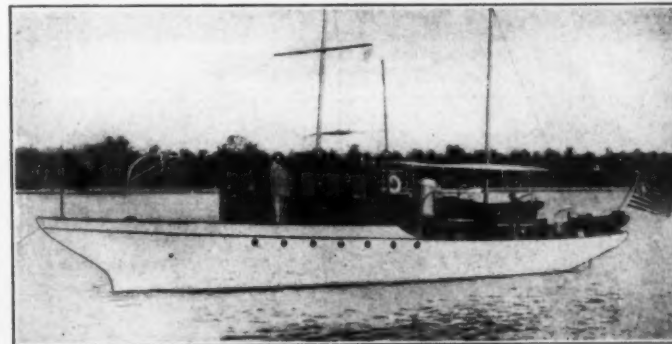
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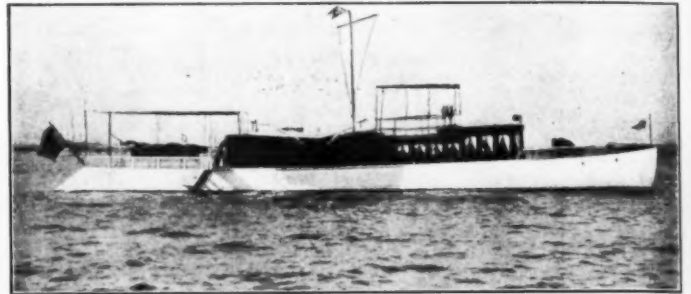
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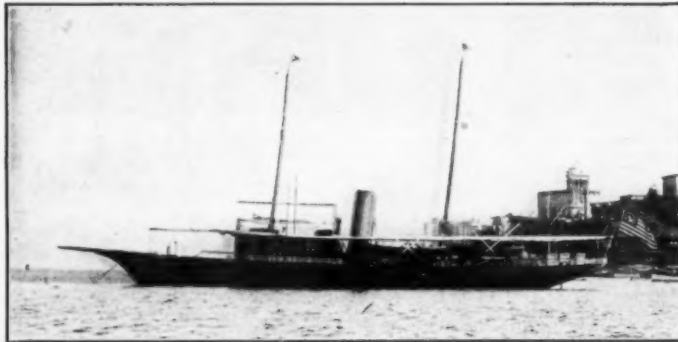
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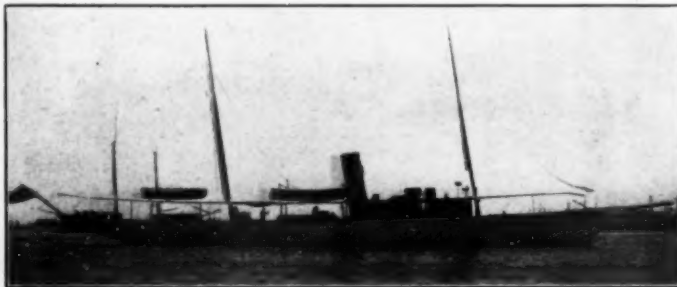
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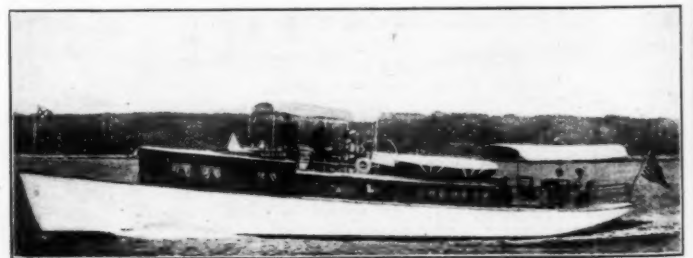
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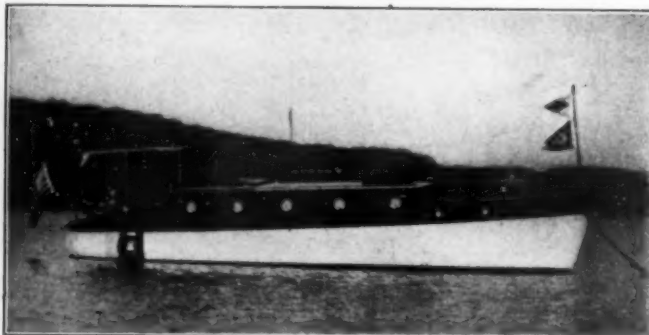
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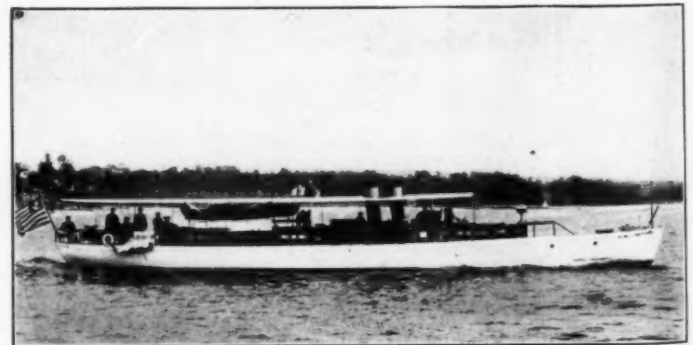
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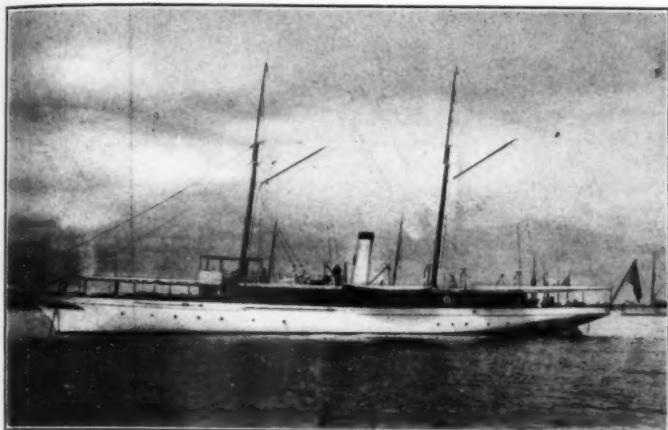
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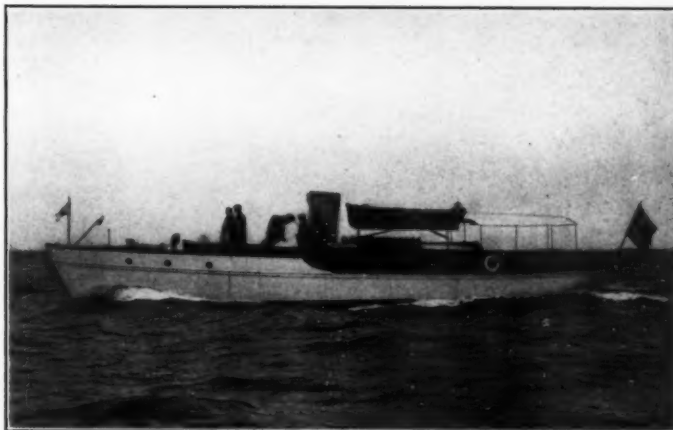
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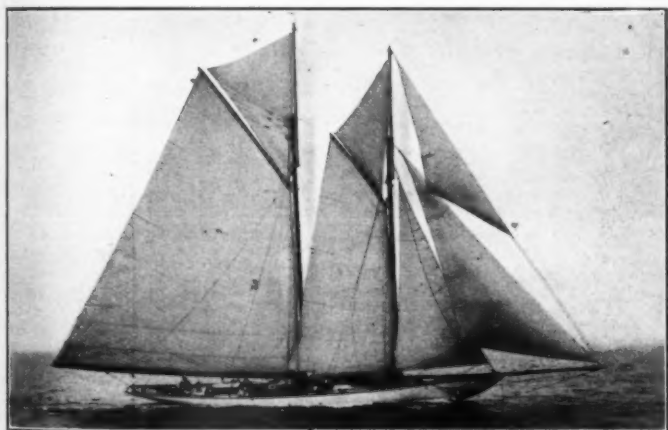
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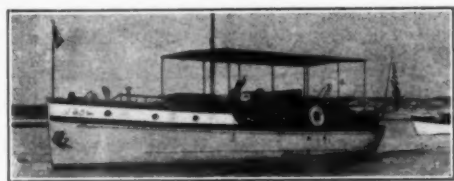
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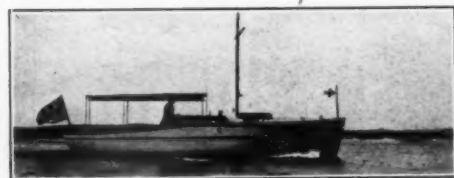
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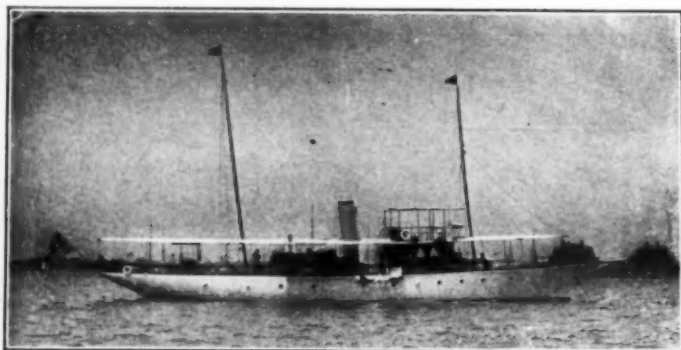
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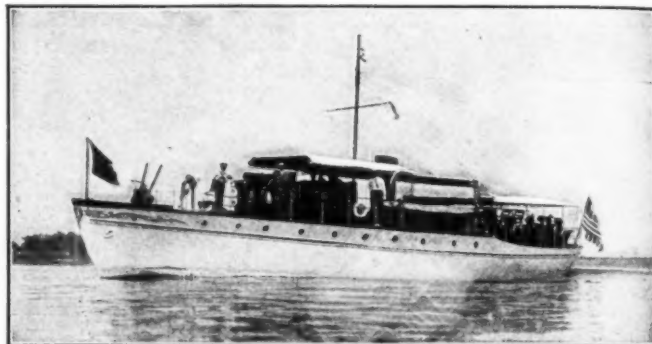
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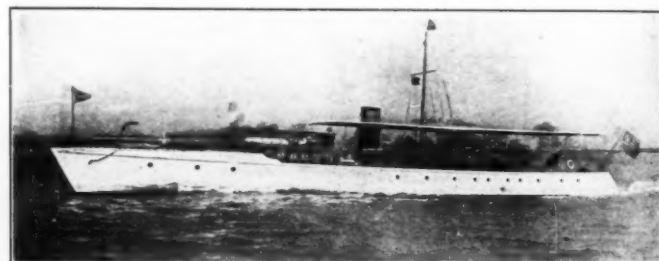
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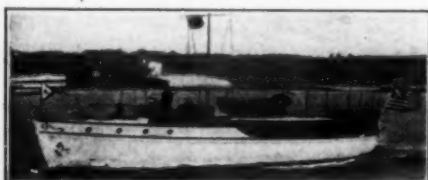
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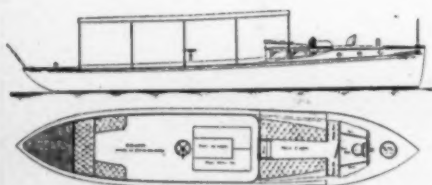
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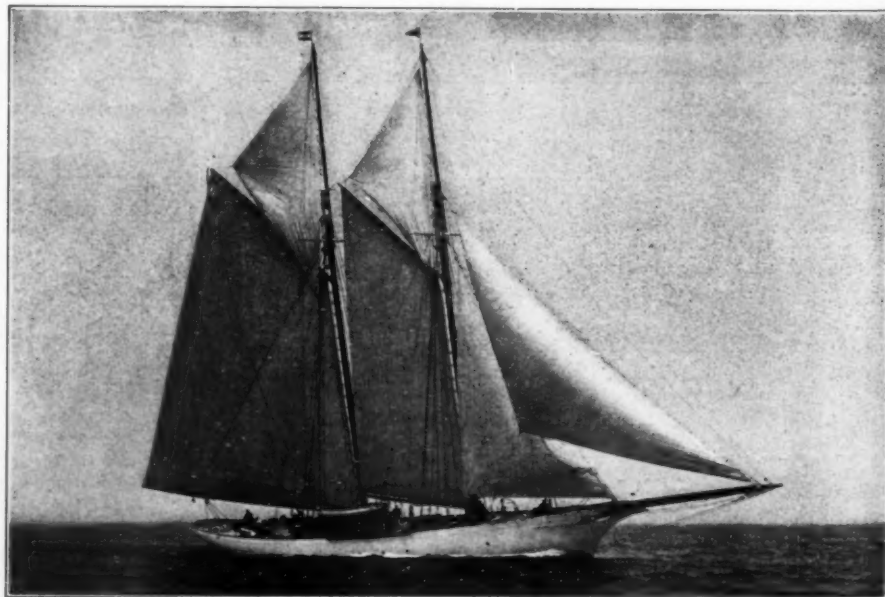
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No. 1180.—Auxiliary schooner; 125 feet; first-class condition; magnificent seaboat; very commodious; 100 H. P. motor.
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BRUNS KIMBALL & CO., Inc.

The Largest General Marine Agents and Yacht Brokers

Telephone 3218 Cortlandt

High Grade Yachts and Launches for Sale or Charter.

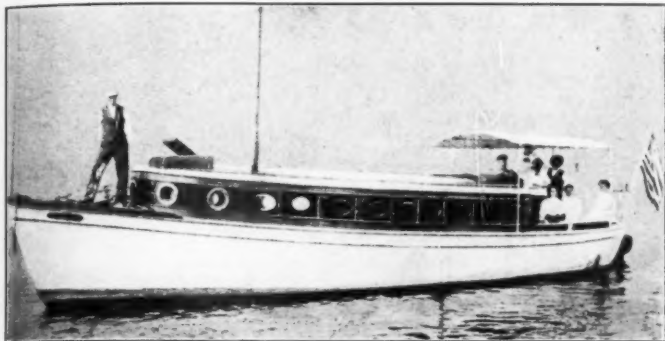
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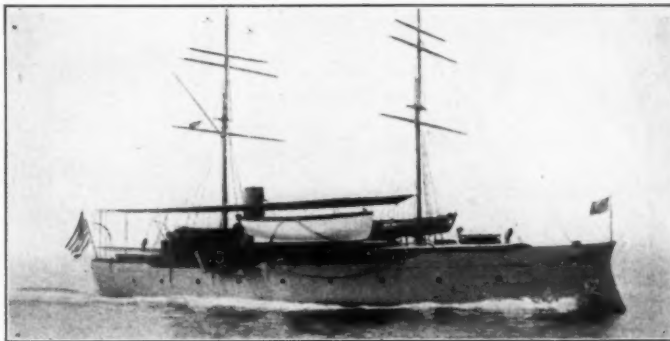
IF YOU DESIRE TO DISPOSE OF YOUR YACHT, LAUNCH
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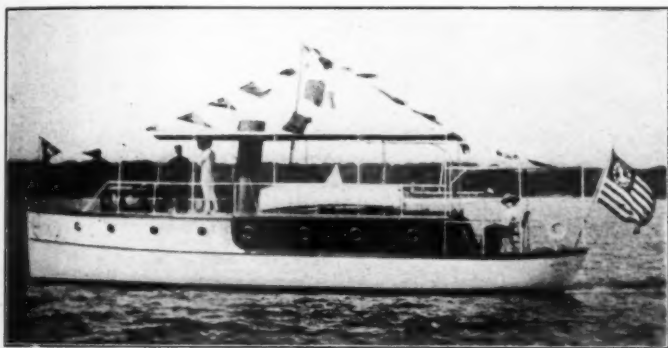
No. 2006.—40 x 9 x 3; built latter part 1908 by N. Y. Yacht & Engine Co.; cabin piano finish mahogany inside and out; 8½ ft. cockpit; 20 H. P. 20th Century engine. Price \$2,800.

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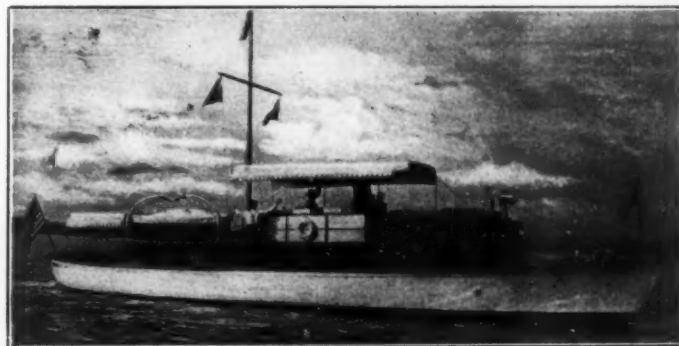
No. 1702.—68 x 13½ x 5; built 1910; every cruising accommodation; 60 H. P. Sterling engine. Price, considering quality, very low.

Please mention MOTOR BOATING.



No. 1516.—46 x 10½ x 3; built 1907; 40 H. P. Lozier engine. Price very low.

Please mention MOTOR BOATING.



No. 1912.—55 x 10 x 3½; built late 1908; 50 H. P. Standard engine; speed 12 miles.

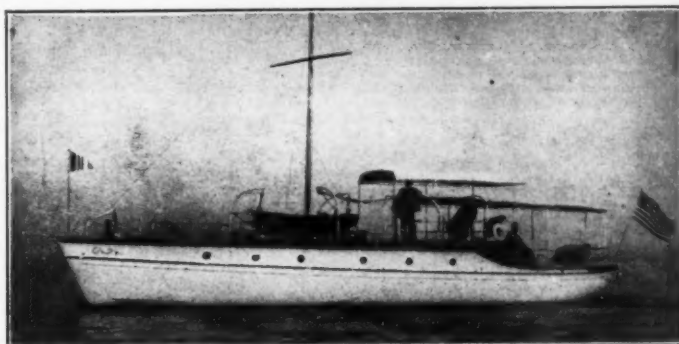
Price attractive.

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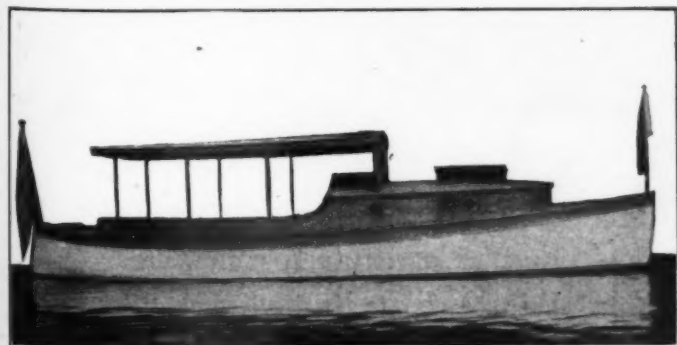
No. 1008.—60 x 11½ x 3½; built 1910; 50 H. P. Hall engine; very speedy. Price reasonable.

Please mention MOTOR BOATING.



No. 1459.—55 x 12 x 3 ft. 3 in.; built late 1908; 30 H. P. Buffalo. Price attractive.

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No. 1689.—30 x 8 x 30; built 1908; toilet, etc.; 10 H. P. Standard engine. Price \$1,150.

Please mention MOTOR BOATING.



No. 1104.—37 x 8½ x 30 in.; just completed; engine forward; 4 ft. bridge, stateroom, main saloon, 8 ft. cockpit; 40 H. P., estimated speed 12 miles. Price \$2,500.

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Gas Engine & Power Company and Charles L. Seabury & Company

CONSOLIDATED

MORRIS HEIGHTS - NEW YORK CITY

Second-hand Steam and Motor Boats for Sale



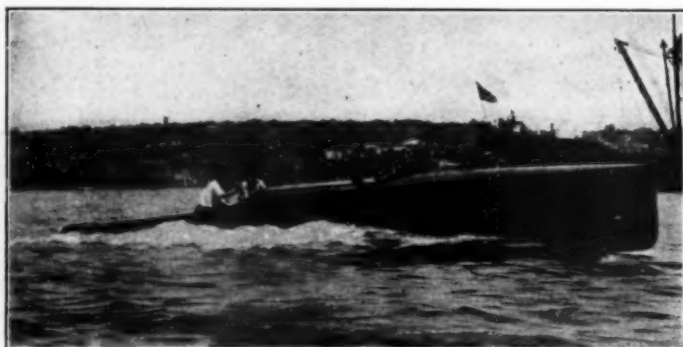
Twin-screw glass cabin motor boat, 47 ft. long, 9 ft. beam, 2 ft. 6 in. draft. Designed and built by us, and is in fine order throughout. A thoroughly high-class launch. Equipped with two 4-cylinder, 4½ in. x. 5 in. "Speedway" gasoline engines speed 11 to 12 miles per hour. Must be seen to be appreciated. Looks like new, and is practically as good as new.

Please mention MOTOR BOATING.



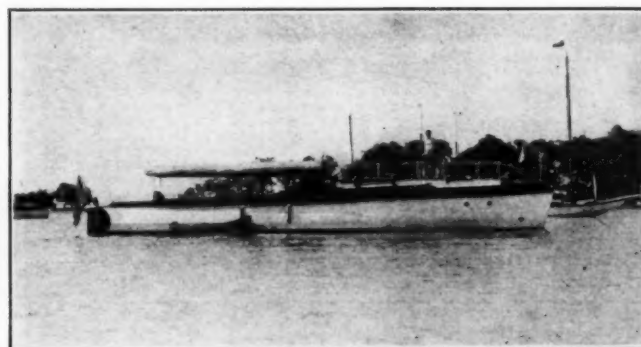
Raised deck cruiser, 44 ft. over all, 38 ft. water line, 9 ft. 6 in. beam, 3 ft. draught. Designed and built by us in 1910. Steersman's platform on starboard side, with controls to motor on steering wheel; reverse lever located at this point. Cockpit left open for chairs; thwart seat at after end of cockpit. Awning and side curtains for cockpit. Boat is lighted with acetylene gas, Commercial Co. system. Machinery: Machinery consists of a 4-cylinder, 4-cycle, 6 x 6 in. Speedway gasoline marine engine, 32-40 h. p. Copper fuel tank, 200 gals. capacity. Speed of the boat is between 10 and 11 miles per hour. Is an elegant sea boat, having been used all summer in vicinity of Block Island. This is without question the best raised deck cruiser of the size that is available, and is only offered, as owner is contemplating having a larger "Speedway" boat built. Must be seen to be appreciated. Fully equipped.

Please mention MOTOR BOATING.



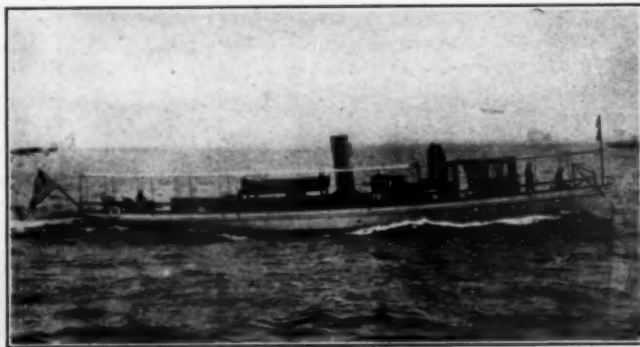
Open motor boat, speed type, 39 ft. 4 in. over all, 5 ft. 4 in. beam. Designed and built by us 1909. Speed, 29 to 30 miles per hour. Hull planked and finished in mahogany. Varnished inside and outside. Equipped with 6-cylinder, 6¼ x 8 in. Speedway gasoline engine with Bosch double ignition—both high and low tension systems. Arranged for one man control. Can seat comfortably six persons, and is the best launch of its kind ever turned out. Has had very little service and will be delivered in fine order at Morris Heights.

Please mention MOTOR BOATING.



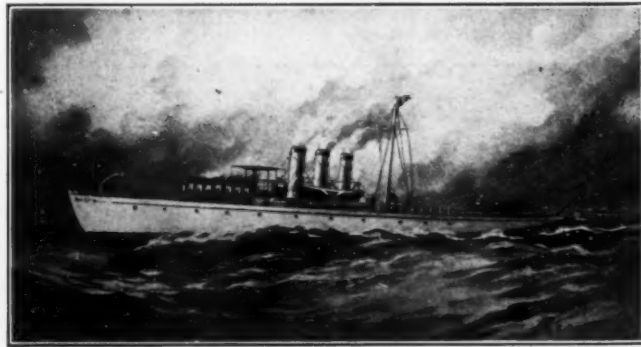
Motor boat, "raised deck type," 55 ft. long, built by Matthews Boat Co. in 1910; has toilet, galley, cabin and motor room; extra large cockpit; equipped with 6-cylinder, 6¼ in. x 8 in. "Speedway" gasoline engine, (Special) 125 H. P.; arranged for one-man control; electric lights; fully found; speed 17 to 18 miles per hour; a very attractive boat; specially adapted for day service.

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Twin-screw, light-draft steam yacht, 83 ft. over all; has large saloon, double stateroom, deck dining room, bridge, etc.; two triple-expansion engines and "Seabury" water tube boilers; electric lights, etc.; boat and machinery in good order, subject to closest inspection.

Please mention MOTOR BOATING.



High-speed twin-screw steam yacht, 137 ft. over all. Designed and built by us in 1909. Equipped with two "Seabury" triple-expansion engines and "Seabury" water tube boilers; fully found; fine order throughout; speed guaranteed 30 miles per hour; fastest steam yacht now available.

Please mention MOTOR BOATING.

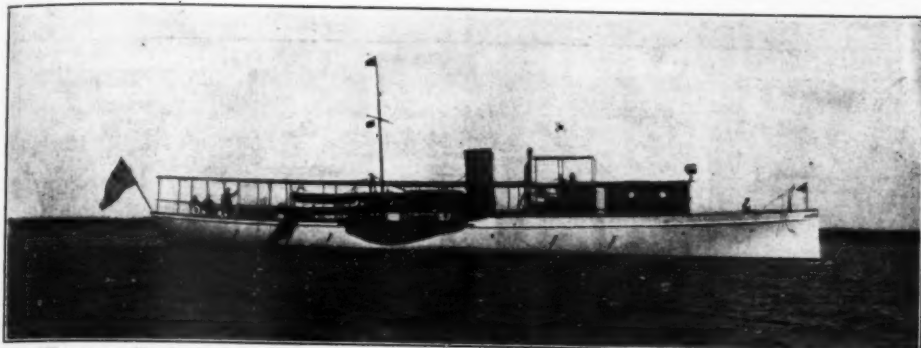
All of the above boats can be seen at our works. Further particulars, plans, etc., will be forwarded to those interested. Inspection of these boats is invited. We have a number of other second-hand craft of various styles and sizes for sale.

THE MOTOR BOATING MARKET PLACE

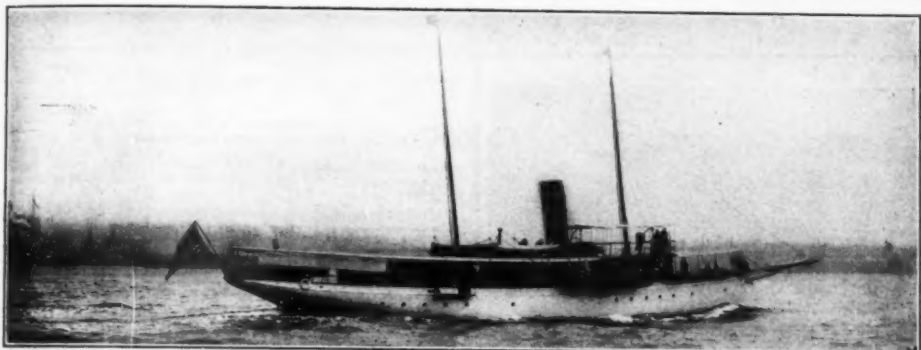
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**Opportunities
for the
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Before you buy or before you sell examine the exceptional buying and selling opportunities under this heading. They comprise the best offers of the month. Please mention Motor Boating.



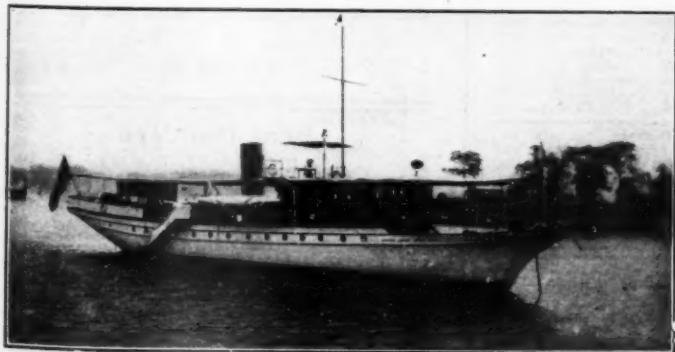
No. 3030.—Handsome motor yacht; twin screw; 300 H. P.; 112 x 15 ft.; excellent accommodations; five staterooms. Full particulars from Whittelsey & Whittelsey, No. 11 Broadway, New York.



No. 3021.—Bargain; beautiful twin screw steam yacht, 130 x 20 ft.; very roomy; lavishly furnished; excellent condition. Full particulars from Whittelsey & Whittelsey, No. 11 Broadway, New York.



No. 940.—Handsome, roomy 60 x 11 ft. cruiser; speed 11-12 miles; 30-45 H. P. 20th Century; launched May, 1910; one man control; main saloon, double and single stateroom; separate galley; bath room, etc.; best construction; price low. Cox & Stevens, 15 William St., New York.



For Sale.—No. 6029.—An unusual gasoline yacht, 94 o. 2., 75 w. l., 15½ b. 6 d.; twin screw; electric lights; sleeps 14 besides crew; bridge steering gear; passed British Lloyd's survey last fall. A power cruiser possessing all of the appearance and staunchness of a steam yacht, with the comfort and economy of a motor boat; inventory and equipment exceptionally complete; can be bought right or chartered. Address the agents, Seaman & Huntington, 220 Broadway, New York City.

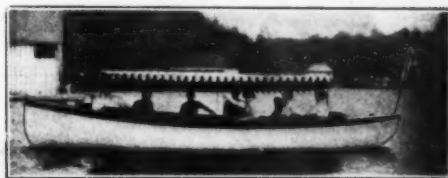
FOR SALE—350 H. P. eight-cylinder marine gasoline motor, Special constructed; all steel used made by the famous Krupp Iron Works, Germany; motor was very little used and is in absolutely perfect condition; would make an excellent motor for a fast cruiser. Mo. Press Brick & Imp. Co., Osage and Marine Ave., St. Louis, Mo.

FOR SALE—25 H. P. latest model Ferro; just worn; six proper bearings; finest condition; complete with-out propeller equipment \$285.00; geared K. W. magneto extra, \$23.00. Address W. L. Vanatta, Hunt's Spur, Mich.



No. 1063.—For sale, fast runabout, 35 x 4.6 x 2 ft. Speed, 20-22 miles; 45 H. P. Jencick motor. Built 1909. Best construction. Cox & Stevens, 15 William St., New York.

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23 ft. x 6 ft. launch, full equipment, adjustable canopy, 7½ H. P., double cylinder Buffalo motor, cherry finish, used four months, 9 miles. Price \$375. H. L. Bastien Boat Works, Hamilton, Canada.

WE CAN save you money on used launches, cruisers and marine engines. Send for our 208 page catalog of marine and automobile supplies mailed on receipt six cents postage. Low prices. Prompt service. Trust Boat & Auto Supply Co., Ann St., St. Joseph, Mich.

POSITION WANTED—(Private) 10 years as general machinist, repairing, testing automobiles and motor boats; have handled four speed to 100 horse globes; understand navigation; 31 years old; married; can take your boat anywhere. Address E. B. Ludlam, 703 Vanderbilt Ave., Brooklyn, N. Y.

DIMELOW'S Rockaway Park Boat Works, foot of Thetus Ave., Rockaway Park. Three new specially designed, ocean going power dories, 21 x 6 ft., finished with lockers, oak decks and coamings. Will sell with or without motors. Second-hand launches. Fay & Bowen cabin launch, 22 x 5½ ft., 1910 model. 30-ft. raised-deck cruiser, 10-h.p. Fulton motor, built 1909. 22-ft. launch, 6-h.p. Lacawana motor. Prices low.

26 FOOT SEMI-SPEED HULL, \$125.00. Can do 18 miles per hour with 12 H. P. Address Lammers, 327 Central Ave., Jersey City, N. J.

EXCEPTIONAL MID-WINTER BARGAINS in motor boats of class: 26 x 4 ft. 6 in., duplicate of Carrie. White oak frame, cypress planked, hollow and round, quartered white oak deck and coaming, finished complete up to the engine, \$350. 23 x 4-8½ runabout Brooks 234, white oak framed, decked and coamed, ¼-in. cedar planked, 4-cylinder 12 H. P. Lockwood-Ash motor, Gies gear. Cavito underwater exhaust, overboard with Yankee muffler, rear starter, bulkhead with auto wheel and controls, two runabout seats, room for four chairs, linoleum floor covering, \$500. One 16 x 4, white oak framed, cypress planked, seat 8, 3 H. P. Ferro Special, \$175. All boats are ceiled with North Carolina pine in 1½ in. strips finished dark oak to match decks and coamings, galvanized fastened. W. B. Brown, Granville, N. Y.

WANTED—Three high class marine engine salesmen. Apply by letter, giving full particulars. State salary desired. Automatic Machine Co., Bridgeport, Conn.

FOR SALE—Steam yacht, length 53 feet 3 inches, beam 11 feet 8 inches; 60 horse power, triple expansion Sullivan engine, new Almy water tube boiler, perfect condition, cabin mahogany finish; cost originally, \$15,000.00; located at Jacksonville, Fla.; will sell cheap. Address W. A. Bours, Jacksonville, Fla.

25 FOOT, 6 ft. beam; Lozier boat; 7½ H. P. Lozier engine; ball reverse gear; toilet, ice box; full equipment; \$600. Barbour, 200 West 99th St., New York City.

FOR SALE—Gasoline cruiser, 42 x 11 x 2½ ft.; fully equipped; Twentieth Century seventeen H. P. engine; speed ten miles; sleeps six; descriptive circular. E. H., 144 West 79th Street, New York City.

WILL SELL CHEAP FOR CASH a 30 ft. x 5 ft. launch, seating capacity fifteen persons; planking ¾ inch cedar; decks black cherry; cockpit sealed and finished in black walnut; lockers and cushions; four cylinder Leighton engine, 12 H. P.; all in good order. C. W. Joles, R. D. No. 1, Clayton, N. Y.

CRUISER BARGAINS—Built from any design in "Motor Boating." \$289 up; 30 x 8, \$488; 35 x 9, \$595; 12 H. P., 1011 engines, installed complete, \$176. Cedar planking, copper fastenings. Time payments. Output limited. R. B. Kuhns, M. E., 111 Broadway, New York. Phone, Rector 120.

FOR SALE—Three 40 ft. cruising yachts; several launches. G. H. Miller, Patchogue, N. Y.

20 FT. LAUNCH, PALMER MOTOR, MAGNETO, mahogany trim, like new; price, \$225.00. Willis Delamater, Peekskill, N. Y.

FOR SALE—Glass cabin launch, 36 x 7.6 x 2.5; Seabury built; mahogany finished; 15 H. P., 2 cyl. Ferro and reverse gear; control at wheel; completely equipped; speed and in excellent condition; very reasonable. C. E. Maltby, New Rochelle, N. Y.

SECOND HAND ENGINES wanted and for sale. Let us know the H. P. and number of cylinders you want, or full description of what you have for sale. Hudson Engine Co., 120 Liberty St., N. Y.

\$950.00—38 x 8 x 6 flush deck cruiser, built 1910. Draft 2 ft. 6 in. Sands toilet, sleeps four, electric lights, galley with stove, ice box, plate rack, sink, Sands pump, etc., etc., complete equipment. 4-cylinder, 4-cycle, 30-horse-power motor. Smith & Balbridge clutch. Apple dynamo (if desired will sell without motor). Cost \$1,600 to build. Guaranteed in first-class condition throughout. A bargain. A. B. Worcester, 10 Maybury, Detroit, Mich.

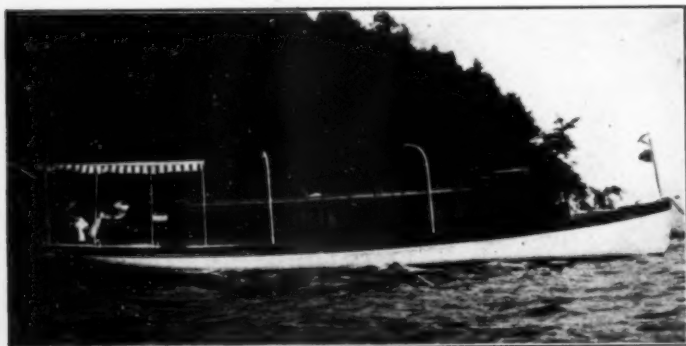
FOR SALE at less than half value. 26-mile speed launch, 26 x 4 feet. Has 4-cylinder, 2-cycle engine, 5 x 5, \$385. 40-h.p., 4-cylinder, 2-cycle engine, very light, with aluminum base, mechanical oiler, friction clutch, 4 carburetors, cylinders 5 x 5, two and three port, \$285. 30-h.p., 4-cylinder, 2-cycle engine, 4½ x 5, 3 carburetors, double ignition, very light, has aluminum base, \$225. Speed hull, 26 x 4 feet. Has made 29 miles. In good shape, good planking. Cost \$300, price \$85. Address E. B. Parkhurst, Moline, Ill.

THE MOTOR BOATING MARKET PLACE

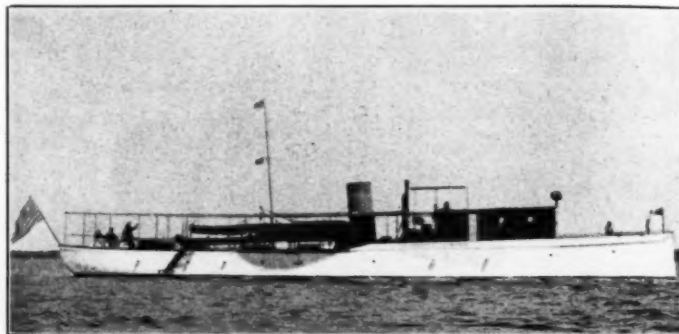
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Opportunities for the Motor Boatman

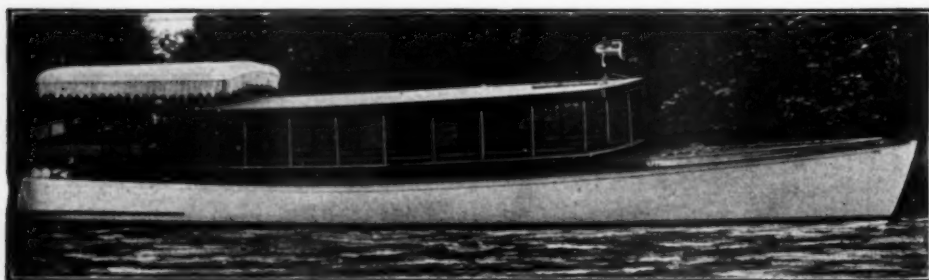
Before you buy or before you sell examine the exceptional buying and selling opportunities under this heading. They comprise the best offers of the month. Please mention Motor Boating.



No. 7280.—Cruising launch, 50 ft., 40 H. P. Lamb. Speed 12 miles. Price low.



No. 1250.—For sale, 110-ft. cruising power yacht; recent build. Speed, 13 knots; two Craig motors. Large accommodations. Full particulars from Cox & Stevens, 15 William St., New York.

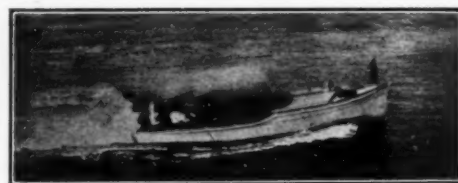


Speed and pleasure launch for sale, 45-ft. long, 6 1/2-ft. beam, 35 H. P. 4 cycle, 4 cylinder Trebert engine, complete with Tobin bronze shafting and bearings, speed fourteen miles. Boat is finished in mahogany, has canopy top, and is fully equipped, including marine toilet room, cushions, two-barrel gasoline tank, etc. Cost \$4,500.00. Boat is as good as new and must be seen to be appreciated. For further particulars address T. H. Mitchell, Salisbury, Md.

FOR SALE CHEAP—25 x 6, raised deck cruiser; cypress-planked; toilet, galley, self-bailing cockpit; sleep three; 8 H. P.; speed 7 miles per hour. Harry Shaeffer, Lockport, N. Y.

FOR SALE—Champion of Pennsylvania, 30 miles per hour. Exceptionally fine and comfortable. Length 34 feet, 6 cylinder, 4 cycle, condition perfect. Attractive price. M. W. Vrydaugh, 347 Fifth Ave., Pittsburg, Pa.

FOR SALE—One 26-mile speed launch, 26 x 4 ft.; engine, 4-cylinder, 5 x 5, 2-cycle; light with aluminum base; price \$350.00. One marine engine, 4-cylinder, 2-cycle, 5 x 5, with mechanical lubricator and four carburetors; \$275.00; very light with aluminum base. One marine engine, 4-cylinder, 2-cycle, 4 1/2 x 5; very light with aluminum base; magneto ignition; \$200.00. One speed hull, 26 x 4 ft.; good for 26 to 30 miles an hour with suitable engine; \$75.00. Address Muscatine Motor Co., Muscatine, Iowa.



ABOVE BOAT FOR SALE CHEAP.

Equipped with 18 H. P., 3-cylinder, 2-cycle Eagle engine; magneto and generator for generating purposes, searchlights, electric side lights; will seat ten people or more; used four months and in perfect condition with complete fittings. Write E. H. S., 80 Summer St., Boston, Mass.

SPECIAL ANNOUNCEMENTS OF THE TRADE

The following special announcements, together with the regular advertisements throughout this book, make this number a complete directory of the principal manufacturers of the trade—of parts, accessories and other things closely connected with the motor boat industry. Before buying, it would be well for you to consult these announcements and write to the manufacturers. Please mention Motor Boating when you write or otherwise communicate with the manufacturers. It would also be well to keep this issue by you for future reference.

Accessories

BREAK-DOWN INSURANCE—motor boat party on the river; 35 miles from repair station; motor stopped; gasoline lead supply pipe broken; instantly repaired by Allen Solderet; journey resumed and party enthusiastic over the trip and Allen Solderet. Complete soldering outfit prepaid, 25 cents. L. B. Allen Company, Inc., 4517 N. Lincoln St., Chicago, Ill.

MOTOR BOAT ACCESSORIES made from canvas or leather are our specialties—tool rolls, canvas boat covers, spark plug cases, etc. We should like to quote prices to motor boat accessory dealers or to sell direct to the owners. American Commercial Corporation, 110 West St., New York City.

TOOL KITS, WRENCHES, ETC., for the motor boatman. Every boatman ought to have a complete set of tools in his motor boat at all times. Opportunity for dealers. You can get such a set a little better and a little cheaper than elsewhere from Cell Drier Machine Company, Taunton, Mass.

WHAT DO YOU WANT FOR YOUR MOTOR BOAT? We make searchlights, castings, carburetor floats, bearings, lamps, horns, cut outs, dynamos, lighting fixtures. Write to us today for complete catalogue and price list of all our specialties. Fowler Lamp & Mfg. Co., 57 East 24th St., Chicago, Ill.

SUPERIOR OIL and Japan colors, stains, ready-mixed paints, wood fillers, varnishes and Japans. If you want the best marine paints and varnishes try the Phoenix brand. Write us for literature. Phoenix Paint & Varnish Co., 124 Market St., Philadelphia, Pa.

Parts

AS LARGE MANUFACTURERS OF ENGINE AND VALVE SPRINGS we are pleased to announce that we have just contemplated an addition to our plant and installed new machinery which doubles our capacity. Sixty-six years of spring making only for particular manufacturers is a guarantee that "DUNBAR-QUALITY" represents spring perfection. The Dunbar Bros. Co., established 1845, Bristol, Conn.

THIS COMPANY was established in 1854 and incorporated in 1890, and is manufacturing marine engines, "Sheriffs" steam steering engines, and the well-known "Sheriffs" propeller wheels, which have been on the market for the past 35 years. We make propeller wheels of all sizes in cast iron, cast steel and bronze. We also do a general marine repair business. Sheriffs Mfg. Co., Milwaukee, Wis.

Cotton, Duck Canvas

LOWELL WEAVING CO., LOWELL, MASS., produces the finest Yacht Duck made in the world. Winning boats have used their duck from big cup defenders to the Sonder Klasse. Insist on having your sails made of Lowell Duck. "Special" for racing, "Regular" for cruising. Get the best and fastest duck.

Waterproof Cloth

FABRIKOID, BECAUSE OF ITS WATERPROOF and superb wearing qualities, and handsome appearance, is rapidly superseding canvas and leather for sprayhoods, side curtains, folding tops and cushion covers on the better grade of power boats. It is made in all colors by the Fabrikoid Works, Newburgh, N. Y.

Ignition

FAHNESTOCK SPRING BINDING POSTS OR connectors for all ignition wires around your boat. You have seen them on dry batteries. We make twenty different styles and sizes. Send fifty cents for a box of one dozen assorted sizes, or send for circular free. Fahnestock Electric Co., 129 Patchen Ave., Brooklyn, N. Y.

Boat Builders

LET US BUILD YOUR NEXT BOAT. We are equipped to design and build the kind of boat you want—a working boat, a cruiser, an open launch or a speed boat. Write us, stating your needs. Kyle & Purdy, City Island, N. Y.

Motors

GET THE RIGHT ENGINE for your boat and you will get the right results. Acadia gas engine is a durable, reliable motor for your next craft. Made in several horsepower. Acadia Gas Engine Company, Bridgewater, Nova Scotia, Canada.

Flag Poles

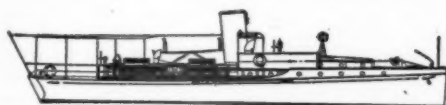
IN ADDITION to the Ajax and Protector Wind Shields and other automobile accessories made by the Novelty Manufacturing Company, Waterbury, Conn., they have added to their line a patented Flag Staff for motor boats, cuts and prices of which will be furnished on application to those interested.

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MARINE AGENTS and YACHT BROKERS
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Agent for The Standard Marine Motor, The Commercial Acetylene Co.
(Safety Storage System.)
TELEPHONES:
Office, 2782, Main. Residence, 3023-3, Brookline.
YACHT BROKERAGE DEPARTMENT:
Commission on Sales, 5 per Cent. Commission on Charters, 10 per Cent.

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Engineers and Naval Architects,
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Telephone 1375 Broad

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88 BROAD STREET, BOSTON, MASS., U. S. A.
Naval Architect and Marine Broker
Power Boats Designed and Built
PLANS AND ESTIMATES FURNISHED

How to Build a 22-Foot V-Bottom

(Continued from Page 14.)

the bottom strake. The most difficult part will probably be the making up of the mitre joint of the bilge, but with a little care a good job can be made. The planking can either be screwed with 1 inch No. 8 screws or nailed.

Engine Girders.—Before putting on the planking it might be well to fit the engine girders, which can be gotten out of 2½ inch or 3 inch stock or it may be gotten out of ¾ inch stock with a heavy oak piece bolted on the sides for taking the engine bed. Approximate size is given on plans, but this will vary with different engines. It should be gotten out about to size and notched down over the floors, the floors being notched about 1 inch to receive it. Through bolt the engine girders to floors with ¾ inch iron riveted over burrs.

Shelf.—The shelf extends between frames No. 3 and No. 6, and is ¾ inch by 1½ inches, and is led into the frame at the height of the deck at side allowing for the crown of the beam. This is led into the frames in such a manner that the coaming when fastened to it will be plumb. Fasten this shelf securely and bevel off the top, using the beam mould to do this which should be laid on top of gunwale from side to side and will show how much will have to be taken off.

Main Deck Beam Mould.—It might be well to cut out a female main deck beam mould according to figures given in plan. By female main deck beam mould we mean one with a concave surface instead of convex. If one of the longest main deck beams is gotten out a little longer than necessary and the bottom edges made parallel with the top, this can be used and will serve the same purpose, with this fair up the clamp, which should have been left a little high so as to allow for the crown of the deck. The raised deck clamp can be faired in the same way by using the 3 section moulds, dimensions of which are given in line plan.

Covering Boards, King Plank and Decking.—These can now be put on. The main deck and covering board to be of oak or mahogany ¾ inch thick and about 3½ inches wide. These can be either moulded out to the shape of the side of the boat or gotten out in a straight parallel piece and sprung round. The decking which is of ¾ inch stock can be laid without battens under or with battens under and the seams can be either tight or left open for caulking. Where articles are going to be stowed under the deck that water will hurt, it is best to have battens run fore and aft under seams as shown on raised deck plan, the deck planking will be fastened to these battens in the same manner as the bottom and side planking is fastened to the stringers. The covering board on the main deck will have to be cut to shape, this is made up in 2 pieces which are butted under water ways so as to hide the butt. King plank is also in two pieces, the forward and after one each being ¾ inch thick. A second king plank ½ inch thick is set above the other king plank so that the engine hatch covers will come under it and prevent the water from running down below. A very pretty and inexpensive deck is made of cedar shellaced and varnished its natural color. King plank and covering board should be of oak, teak or some such wood. The after king plank is a parallel width of six inches, but the forward one tapers from 6 inches to 4 inches.

Floor Beams.—The floor beams can now be put in place, a chalk line should be stretched fore and aft in order to get these level on top. Every third one will extend across the boat and the intermediate ones will have to be run out to the grub strake and bottom planking. It is best to put small stanchions under these, running from the beam down to one of the stringers so that the weight will not be carried on the bottom planking. The floor should now be laid.

(Continued on Page 84.)

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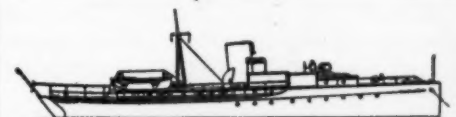
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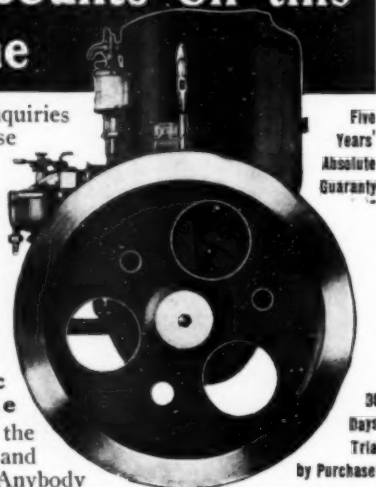
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How to Build a 22-Foot V-Bottom Boat

(Continued from page 83.)

Start with the outboard piece and fit around frames and up against the skin of the boat. The middle planks had best be left loose or merely put in with a few screws so that the bottom of the boat can easily be gotten at.

Operating Bulkhead.—This comes at frame No. 3; the bulkhead is easiest made of staving about $\frac{3}{4}$ inch thick. A thwartship piece to take the top and also one at bottom should first be put in place and to this the staving should be fastened with either screws or nails, trim off the top bevel or with a slight crown and cap with a piece of hard wood about 3 inches wide and $\frac{3}{4}$ inch thick. A control panel about 6 inches when it is fastened to the bulkhead and about 4 inches at top and about $\frac{3}{4}$ inch thick supports the after end of the king plank.

Coaming.—Coaming should be gotten out of hard wood and about the size shown on plans. The lower edge should extend a little below the shelf and the top edge at the forward end should be on a level with the deck where it hits up. Fasten this securely to shelf with screws, which should be counter bored and plugged. Great care should be taken that coaming stands plumb and has no waivers in the top edge.

Seats.—Can be made up of either solid board about $\frac{5}{8}$ inch thick or out of slats of same thickness and about $3\frac{1}{2}$ inches or 4 inches wide. In either case, cleats should be fastened to sides of boat to take the ends of seats, and they should be cleated in two places as shown on plans.

Lazybacks.—These can be built in the same way and fastened to the seats by means of strap hinges, so that they can be laid down on the seat out of the way when desired. There should be two cleats placed on the coaming one on each side to take the back of the forward seat, and the after seat back will rest on the coaming.

Breakwater.—This should be of hard wood about $\frac{5}{8}$ -inch thick and about as shown on plan. This can be fastened to the deck by means of screws, screwed from the inside.

Engine Hatch Covers.—Will be built up in practically the same manner as the deck only there will be a cleat on each end of about $1\frac{1}{4}$ inch by $\frac{3}{4}$ inch, into which are notched the fore and aft battens. It will also be faced with a piece of hard wood $\frac{3}{8}$ inch by $2\frac{1}{2}$ inches as shown on section plan, either piano or strap hinges can be used to fasten the engine covers to king plank so that these can hinge up towards the center in a vertical position. A brass spring as shown on sketch is placed on the top of the operating panel, this engages a brass clip on engine hatch which holds it in an upright position when required.

Reverse Gear Cover.—If the reverse gear is allowed to extend through the operating bulkhead, which it is well as it is easier to get at for control and adjustment and also keeps the weight further aft, a small cover with a portable top and portable side if desired should be built over it about as shown on plans of $\frac{5}{8}$ inch hard wood.

Rudder.—This should be of oak, teak or mahogany and it is not necessary for it to be in one piece but the different pieces should be securely bolted together with G. I. bolts $\frac{3}{8}$ inch in diameter. In order to do this, lay the two edges that are going to be fastened together, with the two edges that are going to come together uppermost, draw a center line on each edge, then on one lay off center of holes about 4 inches apart, square these across to the other piece, bore all holes and after rounding off the corners of the holes and bolts which should be about 6 inches long, drive them in one piece and then drive the other piece down on this. Rudder should be rounded off at the forward and after edge especially at the after edge, so as not to create eddies.

(Continued on page —.)

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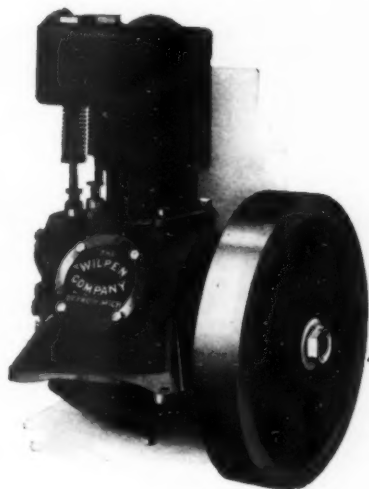
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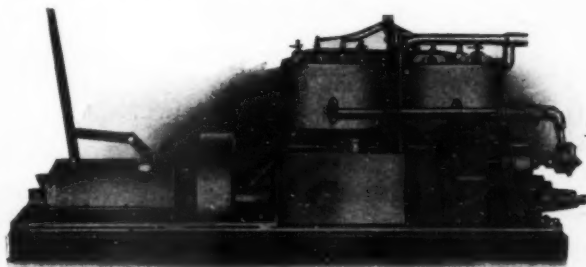
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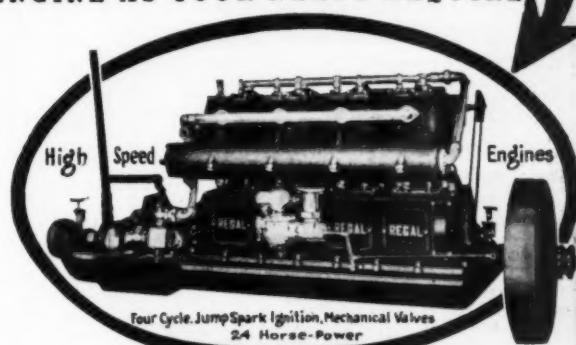
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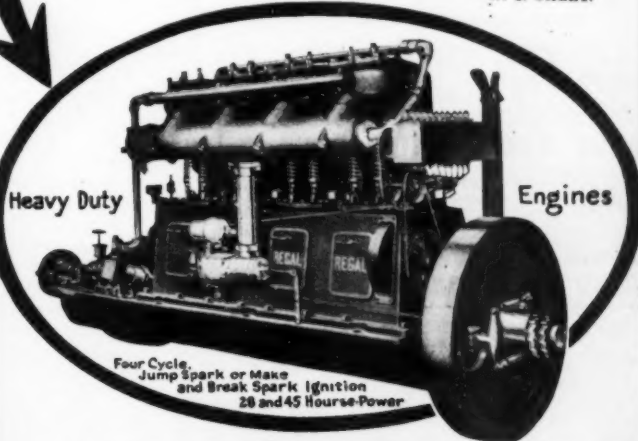
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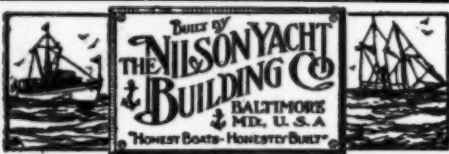
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How to Build a 22-Foot V-Bottom Boat

(Continued from page 84.)

The fittings should next be put on and securely fastened. It will be necessary to leave the top hanger off until after the tiller is slipped through the slot in the stern board and then riveted on the rudder. Four fair leads will be necessary for running this steering line, two under the after deck and two up forward at the operating bulkhead. The two after ones should be put on before the deck is laid, holes bored through the frames a little larger than the steering line with edges chamfered off, making fair leads for the lines to run through. The steering wheel should be bolted in place before the forward fair leads are located so that lines will lead fair.

Finish.—Boat should be carefully planed all over and sanded to a smooth surface. It is much easier to feel by running the hand over the surface the unfair places than it is to see them. Before the boat is entirely faired up the seams should be caulked with cotton, one thread is sufficient and should be well driven in, not however so hard as to start the battens. Prime all the boat that will be painted with a good coat of oil paint, being careful that the paint is well run into the seams so that the putty will stick, as the puttying will be the next operation.

A putty composed of white lead, thickened by a adding whiting, to the right consistency is as good as anything for filling in the seams. At the same time the priming coat is put on the paint work, a coat of filler should be put on the bright work, on close grained wood shellac will be all right to use, but otherwise a silax filler should be used. When the wood is thoroughly filled it should be given two coats of good spar varnish, allowing plenty of time between each coat for drying. The paint work besides the primer should be given at least two other coats of white lead paint; with the last coat can be mixed a little zinc.

The boat is now finished and ready for the installation of the engine.

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- 1 Brass ¾ inch stem band, and screws.
- 1 Brass tiller and screws.
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- 1 Brass skeg, bolts and screws.
- 2 Brass sheaves for steering line forward and screws.
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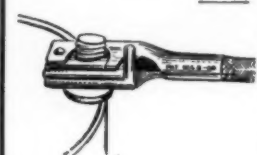
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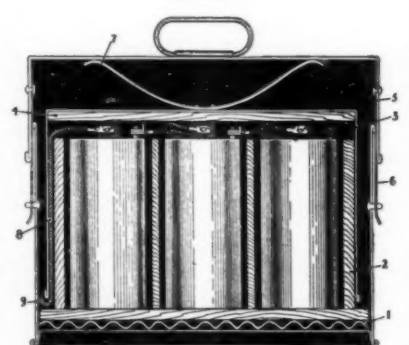
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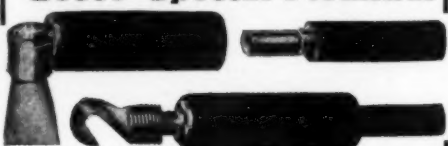
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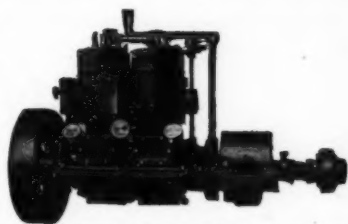
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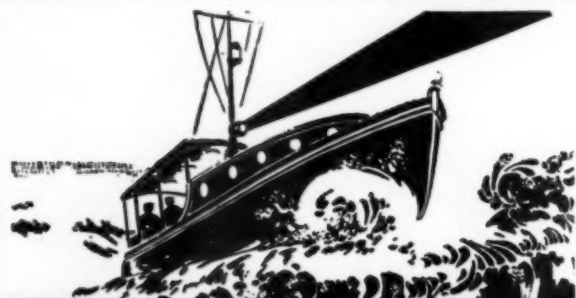
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Current thus generated is accumulated in our Hubler-Dayton Storage Battery, the best storage battery ever devised for marine use, and from this battery it is drawn by the lamps as required.

This double source of current insures against accident. You always have current whether the engine or dynamo is running or standing still. The switchboard gives you complete control of the system. With it you can light any or all lights as desired, cut out storage battery or dynamo as you wish; and a meter gives the amount of current on hand and the rate at which it is being generated and used.

We build Dayton Launch Lighting Systems in three sizes, to fit the smallest or largest motor boat.

Free Ignition System

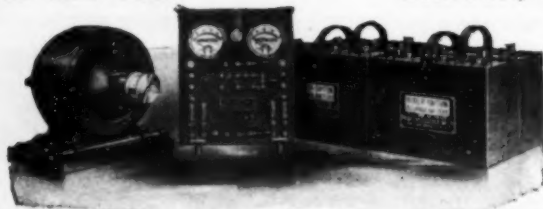
The beauty of the Dayton Launch Lighting System is that it gives you a perfect Ignition System without cost. The current that is generated by this outfit can be used for igniting the engine and insures a constant supply of steady current of even voltage for this purpose.

We also make the famous Apple Ignition Dynamo, the most reliable ignition device known—also the well-known Hubler-Dayton Storage battery and every article necessary to properly ignite a gas engine.

Write for bulletin describing Dayton Outfit which will operate high voltage 1500 c.p. arc searchlight and also low voltage interior lights.

The Dayton Electrical Mfg. Co.

Largest Manufacturers of Ignition and Lighting Apparatus exclusively in the World
188 St. Clair Street DAYTON, OHIO



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in motor boating depends on fuel and lubrication.—That's why it is necessary to have your boathouse equipped with a

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The pump draws the gasoline from a heavy steel tank buried under ground any distance from the boathouse.—That's why you run no risk and have good gasoline.

If you feed live, gingery gasoline into your motor it gives more power.—If you lubricate the bearing with clean, pure oil it eliminates the friction. This increases your power, cuts down repair bills and saves money.

The Bowser can be installed in your boathouse, on the dock or any convenient place.—Keeps the oils free from impurities and where you want them.

Their Economy Pays Their Cost.

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Ask for the Motor Boat Book, No. 113.—It's free.

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low cost and
seaworthiness*

The Hydroplane is the most practical type of speed boat. Its phenomenal successes everywhere have overcome the prejudices against so new and startling a form of marine construction.

Its wonderful records have put it into a class by itself—an entirely new field of aquatic sports. Confident predictions put the Hydroplane into the first rank in the International Cup Races.

It has speed, seaworthiness, and low cost—a combination which puts it in the power of almost everyone to own a high-speed motor boat.

Hydroplane Speed

is higher per horsepower than the ordinary form of hull construction allows. Its hitherto unknown principles of design permit the light-weight, high-power engine to give its maximum speed without strain.

Our new method of reducing skin-friction and displacement as the speed increases places the Hydroplane absolutely without a rival.

Lightness of construction makes the Hydroplane adapted for carrying on davits.

Hydroplane Seaworthiness

means that, unlike the ordinary speed boat, the Hydroplane is a staunch, trustworthy craft in a seaway. It has enough beam and rigidity to make it a safe, easily handled craft.

Hydroplane Cost

is low. Figuring the cost per mile of speed Hydroplanes are exceedingly low in comparison with other fast boats. We will supply you with drawings from which you can construct your own hulls or we will build the boat complete. Working drawings for a fifteen-footer capable of speed exceeding twenty-five miles per hour, \$20.

We are prepared to guarantee prompt delivery of Hydroplanes as follows:

14 foot boat, guaranteed 20 miles per hour	\$ 900
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We will power the hydroplane hull you select with any make of engine you wish.

We design racing hydroplanes up to 400 horsepower.

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38 East 23rd Street, New York City

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RIVERSIDE, R. I., Jan. 24, 1911

*The Bridgeport Wood Finishing Co.
New Milford, Conn.*

Gentlemen:—

I used your Bridgeport Standard (Mitchell's) Non-Fouling Enamel Paint on the 18-foot knockabout Hugi, which I have raced for the past two seasons, and consider that as a racing finish it is impossible to better it.

Hugi was one of the three boats comprising the Rhode Island Team in the Inter-State Knockabout Series at Marblehead this Summer, and she won the Corinthian Mid-Summer Series against the entire class, although sailing in quarters entirely strange to her skipper and crew.

She won more than fifteen prizes of various descriptions during the past season, and I consider that much of her success was due to the fact that her bottom, after being thoroughly pumiced, was as smooth as a mirror, and although she was rated a notably slow boat in light weather, this past year won many prizes in just that kind of going.

I shall certainly take pleasure in recommending it to our local racing men as a paint hard to improve on.

Very truly yours,

T. R. GOODWIN

Pres. Narragansett Bay Yacht Club

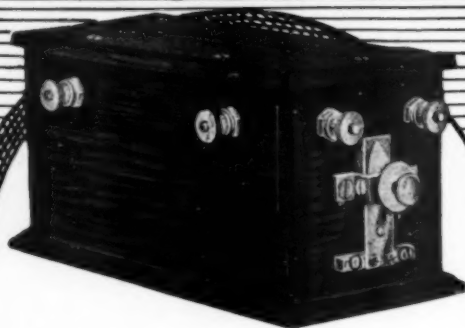
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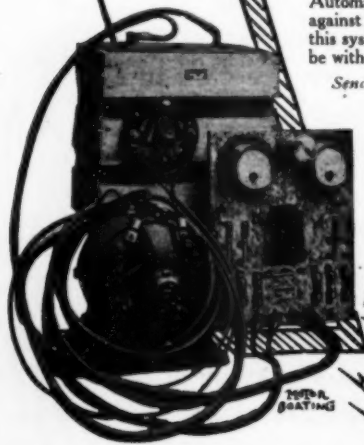
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Lighting Outfit

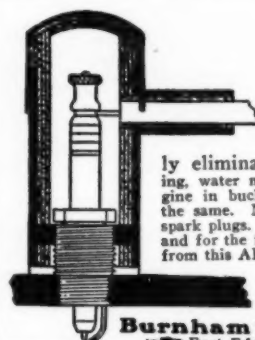
This Lighting Outfit is especially manufactured by us for the illumination of Motor Boats from the small runabout to the large cruiser. As the system is of low voltage, it makes it more economical to install and maintain than any other made. Fitted with Tungsten lamps and heavy filament. Automatic cut-out, safeguarding it against injury. If you once install this system you will never want to be without it.

Send for catalog containing convincing proofs.

Schug Electric Mfg. Co.
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SAY

Here is just what you have been looking for. This Hooded Spark Plug will positively eliminate all short circuiting. Water may be poured on the engine in buckets and it will run just the same. No more trouble with wet spark plugs. We want you to try one, and for the first 100 inquiries received from this AD. we will send each, post-paid, an article worth \$1.50. NOW IS YOUR CHANCE.

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All working
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18-20-22 and 24 ft. boats at proportionate prices. All launches tested and fitted with Detroit two-cycle reversible engines with speed controlling lever—simplest engine made—starts without cranking—has only 3 moving parts—anyone can run it. The Safe Launch—absolutely non-sinkable—needs no bathhouse. All boats fitted with air-tight compartments—cannot sink, leak or rust. We are sole owners of the patents for the manufacture of rolled steel, hot-pressed steel boats. Orders filled the day they are received. Boats shipped to every part of the world. Free Catalog. Steel Howboats, \$20. **MICHIGAN STEEL BOAT CO., 1236 Jefferson Avenue, Detroit, Mich., U. S. A.**

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Yet the Cocopomelo is essentially a trim, speedy boat, makes 9 1-2 miles an hour, as responsive to the wheel as any motor-boat—ascends the most tortuous streams.

Write for our booklet describing the unique tunnel construction which permits the Cocopomelo to range the shallowest shoals—draught only 18 inches.

We make yachts and motor boats along "better than usual" lines—have your architect send us his plans for estimate.

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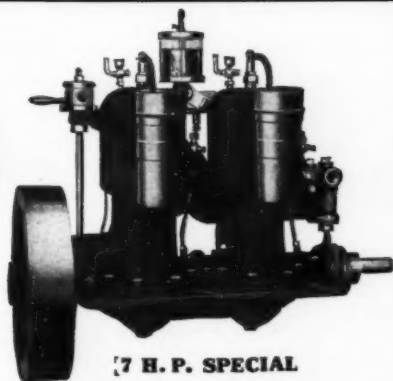
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FOX MOTORS HOLD THE WORLD'S ENDURANCE RECORD

From our 23 sizes and four distinct types you can select a motor exactly suited to your needs. All Fox Motors have large shafts and long bearings and every part is made to withstand continuous service.

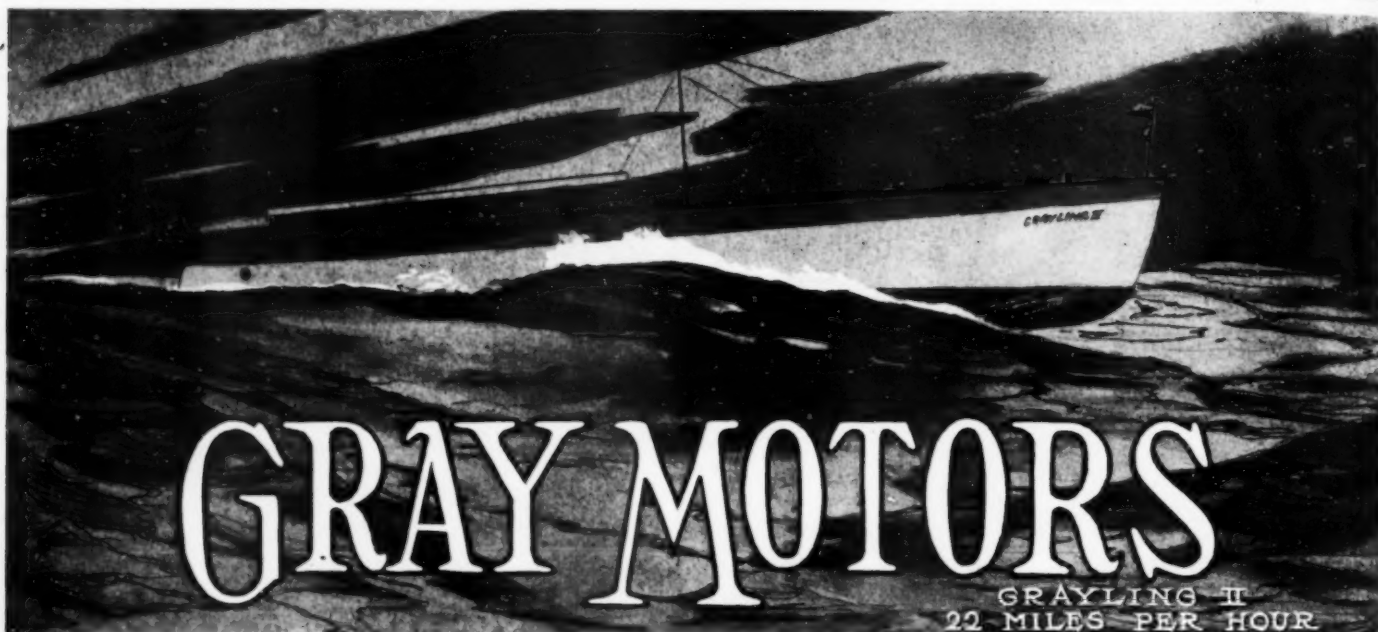
Our Fox Fourth Port Accelerator, patented, is the greatest improvement ever made to increase the speed, power and efficiency of two cycle motors. It has a wonderful record and we shall be pleased to tell you about it.

Remember, that for eight years we have made and sold Fox Motors under a money-back guarantee and we are proud of the fact that even our first motors are giving satisfactory service to-day.

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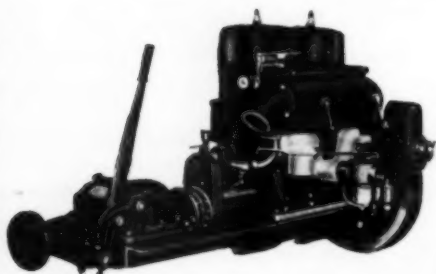
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GRAYLING II
22 MILES PER HOUR

For Large Cruisers, Pleasure Boats, Work Boats, Speed Boats and Canoes



The Engine That Requires No Attention

Equipped with BOSCH high tension ignition system.

We believe our Model "T" to be the highest type marine motor built.

We are prepared to furnish power plants up to 108 horse-power in our Model "T" line for either kerosene or gasoline fuel.

Made in one, two and three cylinder sizes—7 horse-power and upwards. Ask for figures on 36, 72 and 108 H. P. plants.

Perfect compression—starts on spark.

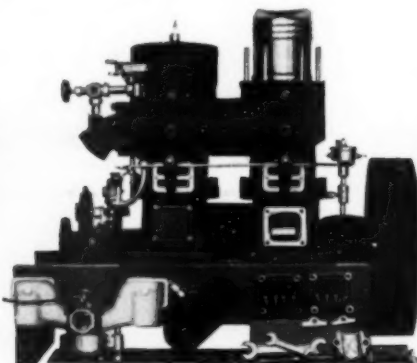
Three engines in one. Combination two and three port. Can be operated as a two port engine or a three port engine, or a combination of the two for high speed racing conditions.

No water pipes exposed.

Lubricates through gasoline.

Special Copper Gaskets most expensive and best Gaskets made.

Made in the largest and most up-to-date plant in the world devoted exclusively to the manufacture of two-cycle motors, by a firm whose guarantee means something.



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It took 14 minutes for an experienced man to disassemble the motor as you see it—the first time—it took less time to put it together again. He said he could do it a second time in 10 minutes.

Removable cylinder heads. (The most accessible engine built.)

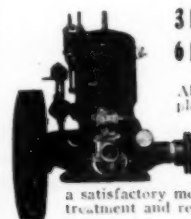
Cylinder can be removed without interfering with the bearings, exhaust manifold, gasoline or exhaust piping.

Pistons can be removed without removing the cylinder, simply taking off the cylinder head and remove two large hand hole plates on the side.

You know what accessibility means in a boat.

That's only one of the features of a Gray Model T.

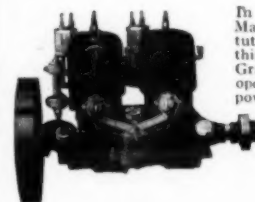
The same workmanship—The same quality of material—The same STRONG guarantee as our \$560 motor.



3 h. p. Guaranteed to \$60
develop 4 h. p.
6 h. p. Guaranteed to \$89.50
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Above prices are for Complete Outfit.

The Big Plant—the splendid guarantee and equipment—the broad experience behind the Gray Motor insure you a satisfactory motor, prompt, business-like treatment and real motor satisfaction.



In a test by the Massachusetts Institute of Technology, this 12 horsepower Gray Motor developed 17½ horse-power.

12 horse-power complete outfit, ready to install in your boat. \$188

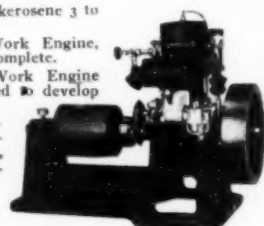
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9 H. P. Work Engine, \$94 to \$124 complete.

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24 H. P. Irrigation Pumping Engine, \$346—36 H. P. for \$560.



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50 FT. OYSTER DREDGE FITTED WITH 35 H. P. GLOBE

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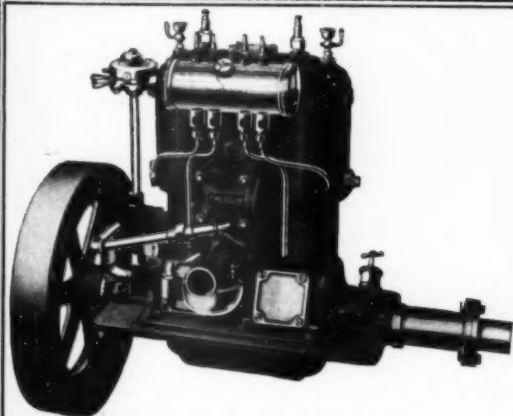
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CRUISING YACHTS
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16-20 H. P. \$250

23.6 MILES AN HOUR IN THE EEL, A 25 Ft DISPLACEMENT BOAT

2000 mile cruise, in open water, without a nickel's expense of single engine adjustment in the hunting cabin cruiser "Elean-r" 32 x 9 x 3 at average cruising speed of 8.9 miles an hour.

Detail Specifications of 16-20 and 32-40 H. P. Two Cycle Engines

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PISTONS—Finest gray iron with five rings ground on all working surfaces on Heald automatic grinders.

FINISH—Our engines are not filled with iron filler or other surface coatings to give the metal an appearance of smooth castings. The casting entering into the construction of our engines are as smooth as

boiler plate, and they receive no treatment other than the finest quality of enamel in a fine royal blue color. This is not affected by heat, salt water or oil. Compare this with engines that are slushed and painted.

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SIZES—We build two-cycle engines from two to six cylinders, 20 to 60 H. P. and four-cycle engines from four to eight cylinders, 40 to 600 H. P., which are installed in some of the finest boats afloat, and have won every contest wherever entered.

120-125 H. P. 290 lbs.

BEARINGS—Best quality white bronze and special Hoyt metal scraped to true alignment.

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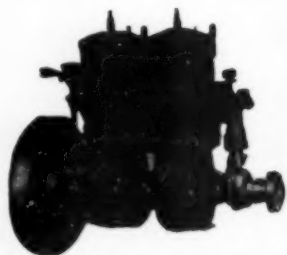
ACCURACY AND WORKMANSHIP—All of our engines are built to standard gauge on the interchangeable system by the pick of workmen from the U. S. Navy Yard and Gun Shops.

379 Miles at over 29 miles per hour in the 32 ft. "Dan Patch" without a single miss. This is a world's record for a thirteen hour non-stop run for any boat or any power.

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Buy the **BEST** first instead of experimenting with unknown makes

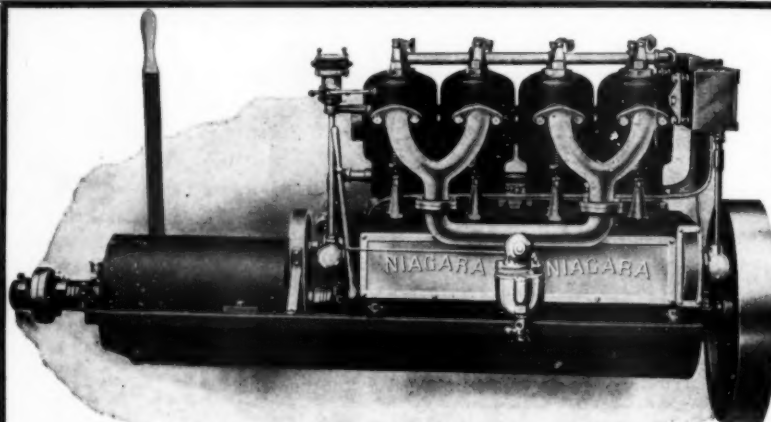
The prices above are for "LIBERTY" MARINE MOTORS, fully equipped and not for the bare engine. Carburetor, Timer, Oilers, Muffler etc., fitted and tested ready to run.

AGENTS! Write us at once for territory and our money making plan, which assures success. Liberal discount allowed on the first motor sold in each locality.

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We furnish Complete Boat Fittings, Ignition Outfits, Reverse Gears, Bronze Propeller Wheels and all Marine Supplies. Write for our new Catalog, NOW
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Made in 2, 4 and 6 cylinders, 5 to 90 h.p., with short or long base, according to requirements, for

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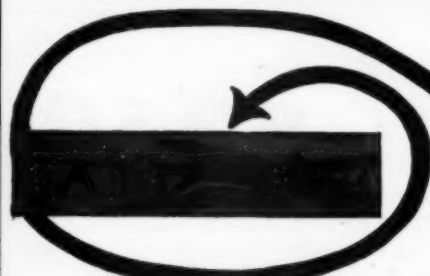
Every NIAGARA is fitted with mechanical force feed oiler, rotary or plunger pump and high tension dual magneto, if desired. NIAGARA crankshafts are hammer-forged out of 35 point carbon steel and have two bearings to every throw. The NIAGARA is recognized throughout the world as

Powerful, Dependable, Economical, Graceful.

It has no intricate, complicated or superfluous parts. Just motor, that's all.

Investigate. Better be sure than sorry.
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Means you must buy lumber, build moulds, spend weeks of hard labor in assembling a lot of loose parts, besides steaming and bending ribs to get the resemblance of a boat.

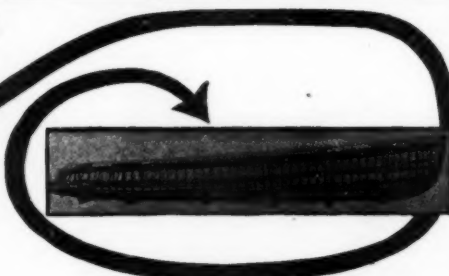
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New Boat

We are Naval Architects and Engineers

Specializing in Motor Boats, and build all kinds,
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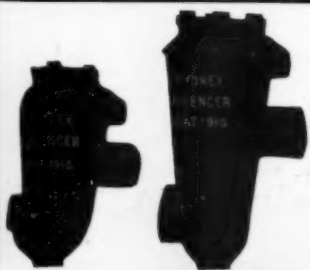
Let us send you our Catalog and convince you of the
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VALLEY BOAT & ENGINE COMPANY
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THE FAULTLESS WAY

Means frame is all erected, every rib bent to its exact position, sheer strakes, bilge clamps, and garboard strakes all fitted and permanently fastened. Two hours work and you are ready to begin planking.



HYDREX IS TO THE MOTOR WHAT MAXIM'S SILENCER IS TO THE GUN

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Power or Efficiency**

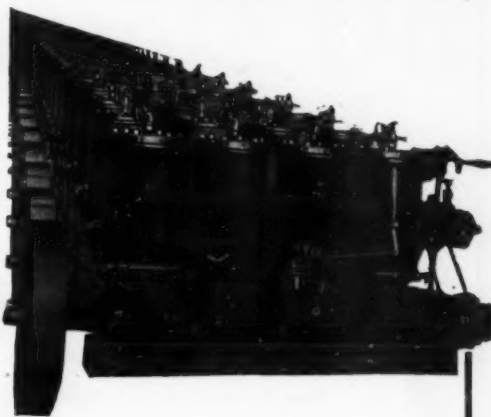
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compelling less noise from motor boats Successor to muffler. Replaces all mufflers, expansion chambers, or under water exhausts, or may be coupled to latter. No heat, odor, back pressure, salt or clogging. Practically indestructible. Water cannot flow back. Approved by U.S. Navy Inspector. Now is the time to fit your boat. Fits any motor (2 or 4 cycle)—any size—any boat. Special light weight for speed boats. Write to-day for new descriptive circular.

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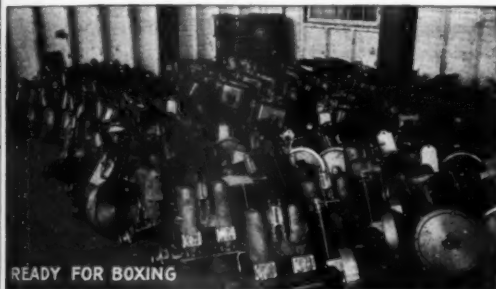
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Back of every Fairbanks-Morse Marine Engine is the **absolute guarantee** of the **largest makers of gasoline engines in the world**. Every feature of these engines has been thoroughly tested and has proven to be the best possible construction for hard, everyday service.

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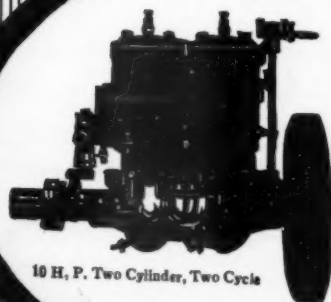
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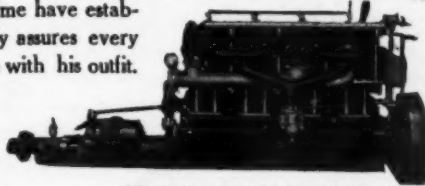
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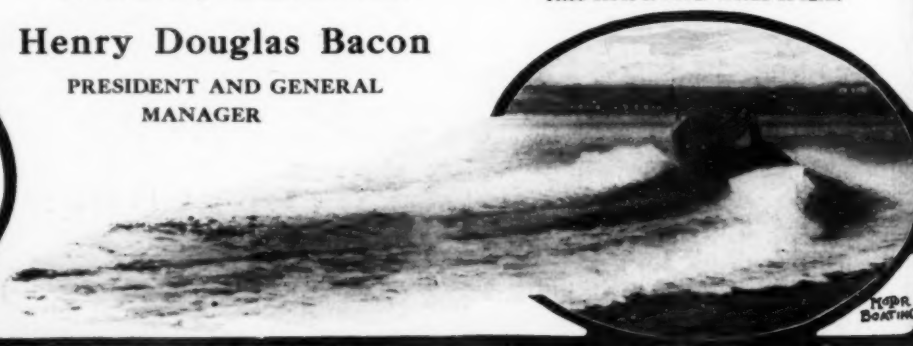
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Note flat Wake of Regular Hand "V-Bottom."
Also Heel towards inside of turn.



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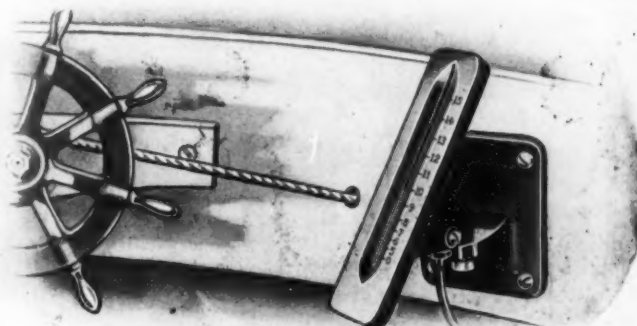
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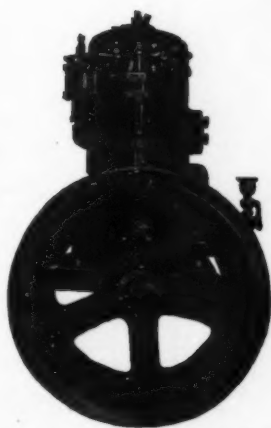
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Ask the Fishermen what they think of the "KENNEBEC" ENGINE

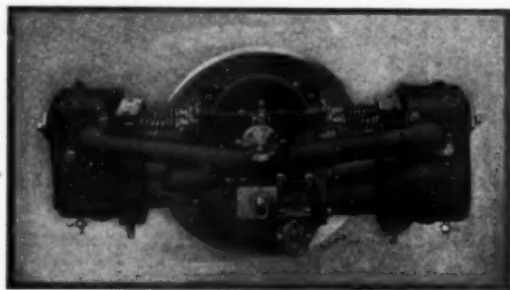
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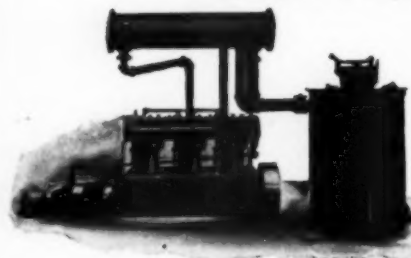
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The Motor which is surprising the boat owners in every locality wherever introduced, on account of their compactness (can be placed under seat if so desired), economy of fuel consumption, non-vibrating qualities, and their perfect reliability. When supplied with a good spark and plenty of gasoline they will run until stopped. The owners of Beilfuss Motors are our best advertising medium. Why? Because they cannot say too much in their praise.
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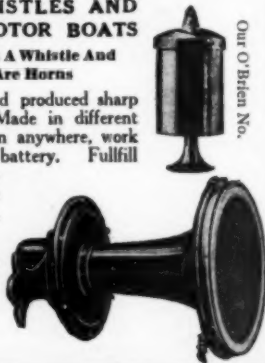


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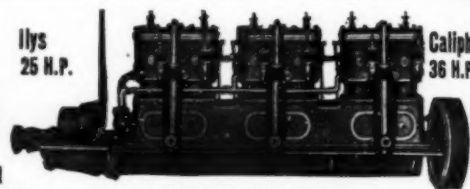
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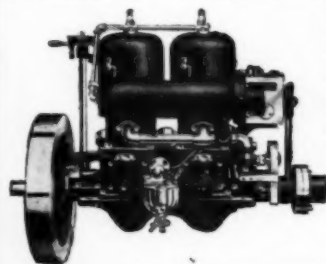
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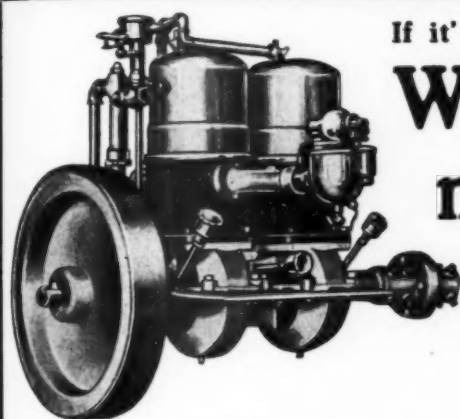


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Joe's gears are strong, efficient, reliable and durable.

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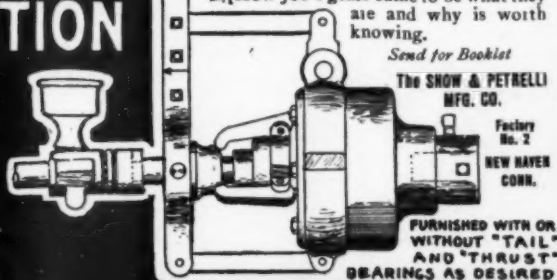
How Joe's gears came to be what they are and why is worth knowing.

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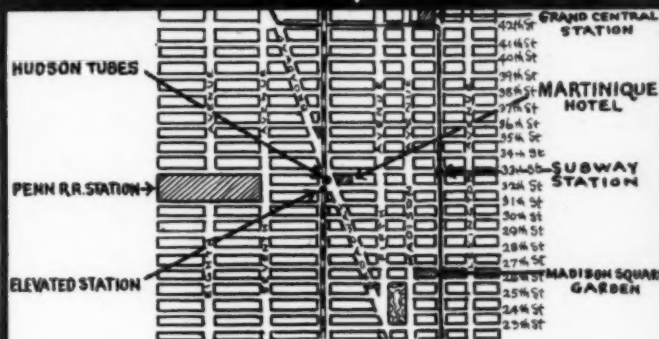
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IT is true economy to use Simms Magnetos because they not only increase the power of the motor but also prolong its life by their efficiency and regularity of sparking.



**Simms Motor Starter--starts
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Kennebec Motor Canoe Co., 85 Chapin St., Waterville, Maine.

New Rules for the British International.

(Continued from page 10.)

to the custody of the trophy. The trophy shall be held by such club for one year or until the date of the next race, whichever shall be the shorter period, when it shall be returned to the recognized club of its country.

9. The club having possession of the trophy shall undertake the safe custody of it, and shall insure it for £250, and shall pay the necessary premium. Such insurance shall cover not only loss by fire or theft, but any other loss or damage whatsoever.

10. The only limitation of the size of the competing boats shall be the overall length of the hull, which shall not exceed 40 ft.

11. There shall be no restriction on the number, size, or horse-power of the engines or motors, except that each boat taking part in any race shall contain and be fitted with such mechanical power as will drive her astern at a rate of speed not less than four knots in still water.

12. Each boat shall carry a distinguishing flag, which may be of any material, and which shall not be less than 12 in. hoist, nor 15 in. fly, and shall be carried at a height of not less than 2 ft. clear of the deck.

12a. Each boat entered as one of a team representing any country must start in every race before the winning boat completes the course, and must finish the course within three hours of the finish of the winning boat. Any boat failing to do so in any race will be ineligible to start in any succeeding race.

13. In the event of any temporary accident to or derangement of any one of the competing boats during the race, no assistance shall be rendered to the boat other than by the hands carried by the said boat. If the accident or derangement is of such a nature that outside assistance shall be necessary, the distinguishing flag shall be hauled down and the boat shall take no further part in the races. Outside assistance may not be given or rendered or procured until the distinguishing flag has been hauled down, but after the same has been hauled down assistance may be given, but the boat shall be immediately removed from the course, and shall not interfere in any way with the other competitors.

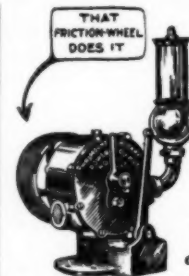
14. In case of an accident to one of the competitors the other competitors shall continue the race and finish the course. In the event of one competitor going to the assistance of another the committee shall decide whether the race shall be run again.

15. If in the opinion of the international commission, constituted as provided in condition 10 of the Deed of Gift, a postponement of the race or an alteration of the course shall be desirable, owing to unfavorable weather or any unforeseen cause, this Commission shall have power to take such action as may be necessary; but in any case the course must conform to Nos. 5 and 6 of these rules.

16. Each boat competing for the trophy must carry at least two lifebuoys in a position ready for use.

A Thornycroft Hydroplane for the B. I. Trophy.

SEVERAL rumors have come to us lately that remarkable boats are being planned or are under construction as challengers for the British International Trophy, and upon the authority from which the latest statement comes we are safe in saying that a 40-foot hydroplane designed by Sir John Thornycroft is now under construction for Mr. E. Mackay Edgar. In design the new boat is said to be similar to Miranda IV, although 40 ft. in length, whereas the former boat was but 26 ft. She is being built at Woolston by Messrs. Dixon Brothers and Hutchinson. One of her motors will be the one that was used in Maple Leaf, the unfortunate 1910 challenger, and which has since undergone some reconstruction.



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Rotary Blower and Whistle.
A bronze air Compressor
Mechanically perfect
Requires small space in boat
Will last for years

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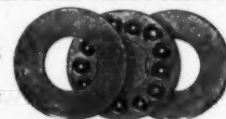
for either above or below the water line. Simple, easy to operate, suitable for heavy work or owner's room. Will outwear any other closet made.

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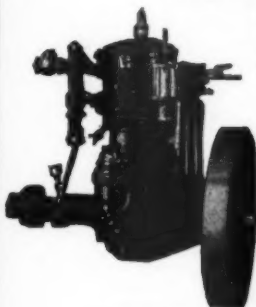
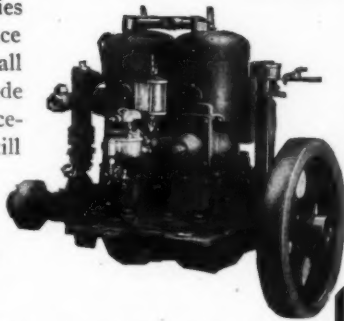
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Eliminate the boat builders' profit, heavy selling expenses, manufacturing cost and excessive freight charges. These are big items of saving for you.

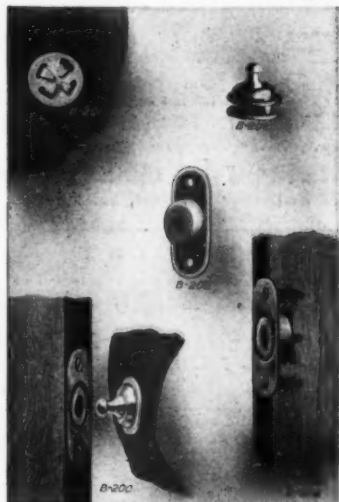
Save money—build your own boat—you can do so cheaper by 25 to 75% than boat builders will ask. All you have to do is to buy it and build it under the "*Wright Way Which is the Desmond Way.*"

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B-200—Shows the complete Broga Automatic Fastener

B-201—Shows method of securing fastener to goods. The stud has twin washers, one on each side of the goods, to prevent tearing out

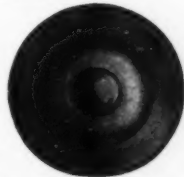
B-202—The socket, front and back view. The front view shows method of fastening it to woodwork

For Motor-Boat Curtains, Slip Covers, Spray Hoods, Etc.

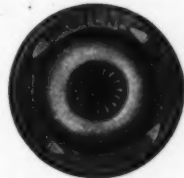
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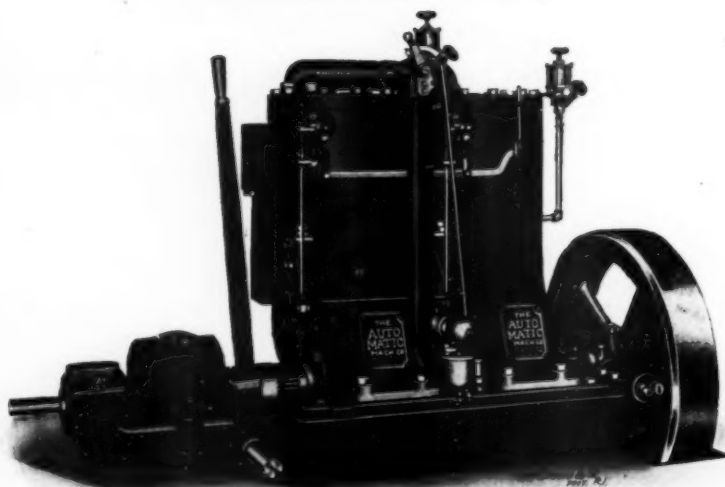
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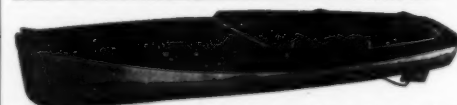
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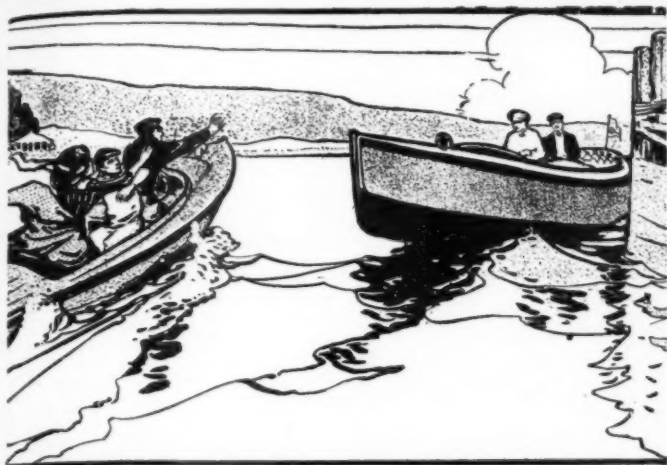
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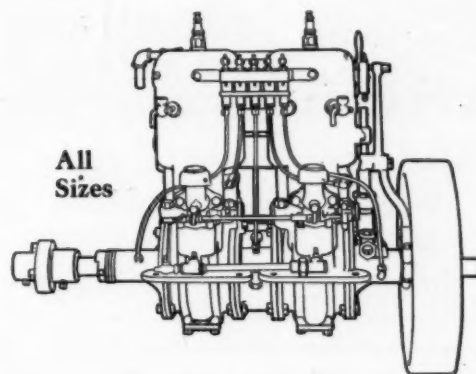
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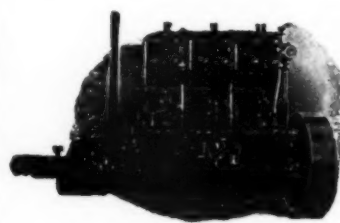
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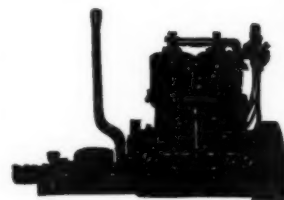
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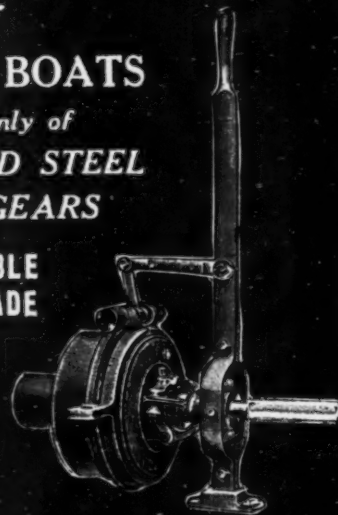
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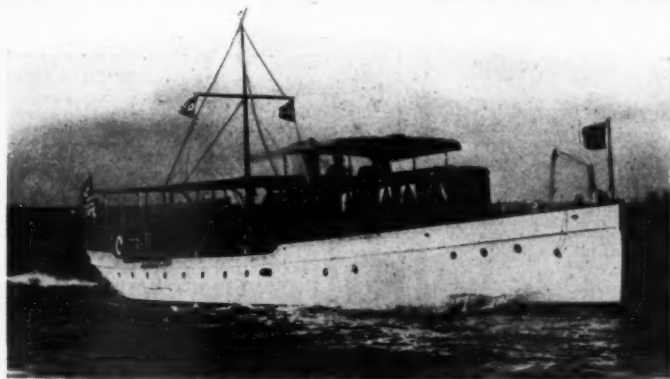
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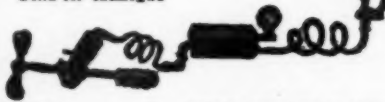
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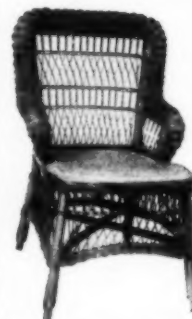
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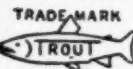
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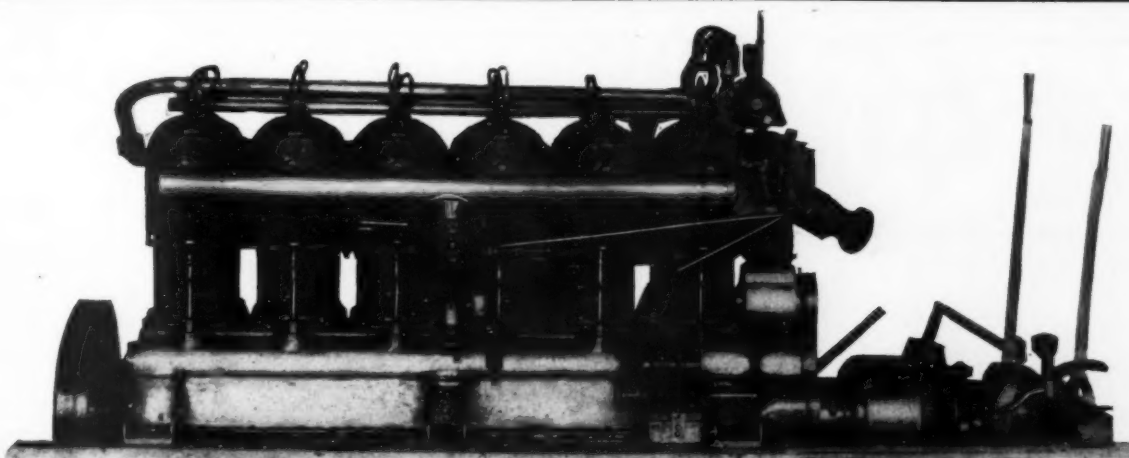
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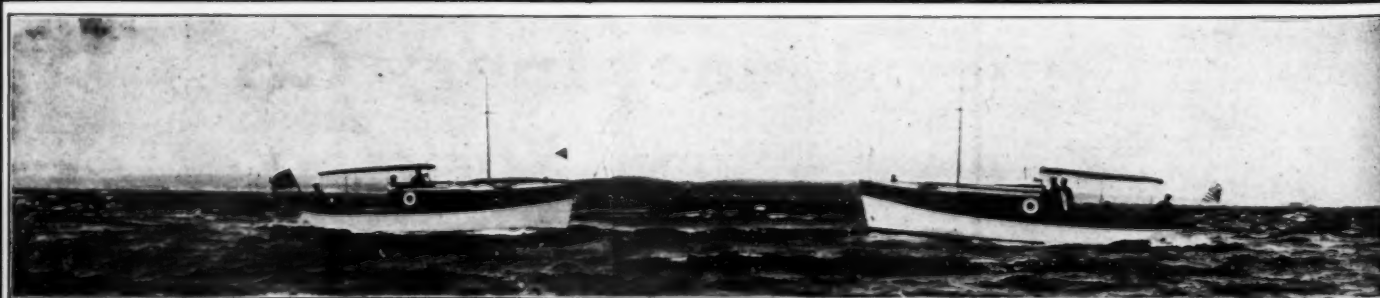
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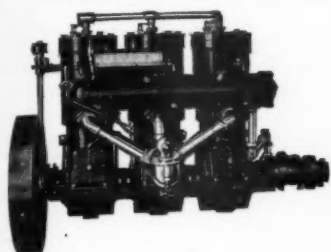
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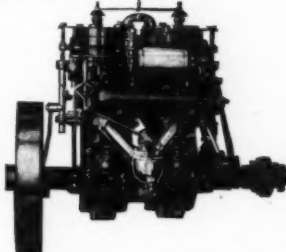
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Medium and Heavy Duty Type

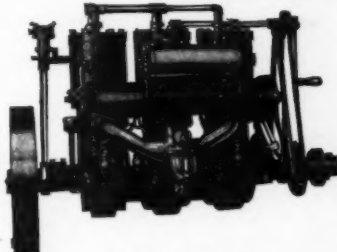
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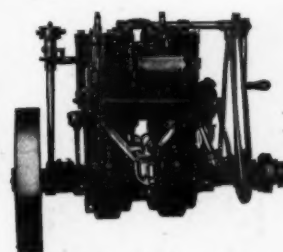
1 Model 27-32 H. P.



5 Models 6-8-10-14-18 H. P.



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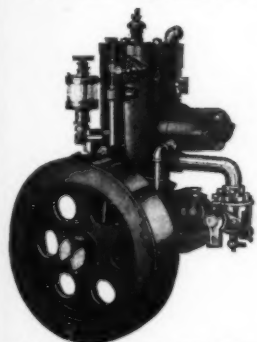
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Every part is interchangeable and removable without completely taking the motor apart. Our Back-firing eliminator overcomes base explosions, provides a better mixture and greater power.

Your new boat, equipped with a Bridgeport Motor, will be a complete success.

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That's what everyone is looking for, whether on speed boats, cruisers, or working boats. It means saving of time on working boats and the pleasure of winning many races and prizes on speed boats and cruisers. We can furnish you propeller wheels that will do the trick on any class of boats; we have all styles of speed wheels for all classes of boats. Just let us know your requirements and full data of boat and engine and we will be pleased to select you a wheel that will increase the speed of your outfit over any other wheel you possibly can purchase. Our propeller wheels won the majority of races and prizes last year.

Have you a Reverse Gear that gives you trouble? Then why in the world don't you get a good gear? There is none better than the old reliable Michigan; it will hold the largest wheel your engine will swing and have full instantaneous control of your boat at all times and will never give you any trouble in the least degree.

Our specialty is marine accessories. We can supply you with anything you may need for your boat or engine, including speed wheels, weedless, towing and reversible wheels, reverse gears, underwater exhausts, steering wheels, chocks, cleats, accumulators, rear starters, air pumps, and a thousand and one things of the latest design, at prices suitable to all. As to quality, you cannot better the Michigan line.

Send for our large free catalog, full of valuable information; every boat owner should have one.

MICHIGAN WHEEL COMPANY
556 Canal Street Grand Rapids, Mich.



"HERE IS THE COMING PROPELLER"



for small boats. I mean it and I know what I'm talking about. Absolutely no comparison between it and the old style equipment. The Roper is controlled by one lever *which does all the work*. Engine coupled directly to propeller shaft. Propeller blades change 'pitch' as you move lever and keep uniform load on the engine. The Roper gives you 'steam engine control'—simple, flexible and safe. Don't talk reverse gears to me."

ROPER SAFETY PROPELLER

gives you instant and absolute speed control in either direction. It minimizes all dangers due to engine and propeller troubles. The Roper comes out strong just where others fall down. No racing, flooding or stopping—no worn clutches or gears to fail you at a critical moment. Only with the Roper Safety Propeller can you get the best out of your boat.

Send today for our new illustrated booklet.

Our motor boat speedometer is a winner too.

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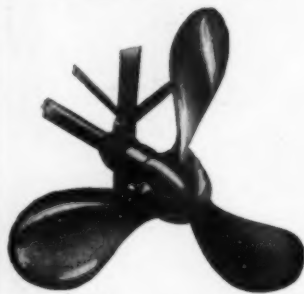
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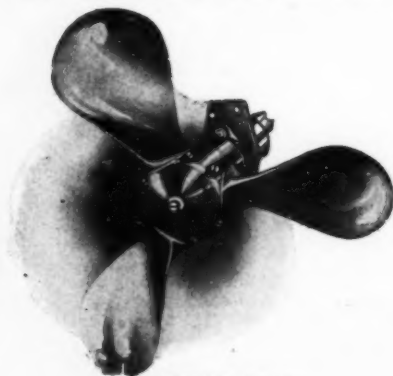
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SPEED STRENGTH CONTROL

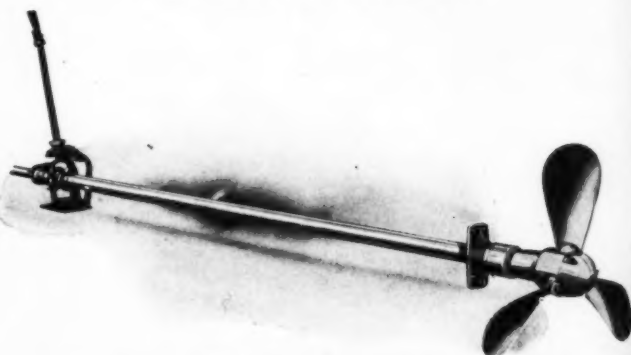


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SPEED WHEEL

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No solid speed wheel has ever equaled a Sintz Speed Wheel. The Sintz has all the advantages of a reverse gear, with none of its weak points. There are no obstructions to catch weeds or debris. The blades cannot come off or be unlocked without removing the shell cap. Every part of the mechanism is stronger than the propeller shaft. It is suitable for from 1 to 200 H. P. in Canoe or Tug, Cruiser or Racing Boat. Get a catalogue. It's Free. We don't want stamps to cover the postage.

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More Power, More Speed and More Smoothness

AN Engine clogged up with carbon deposits loses compression and power; "pounds," overheats, and gets noisy. •Prest-O-Carbon Remover, injected into the "cylinders, loosens and removes all carbon from pistons, piston rings, cylinder walls and valves. Clean out your engine with it, and then use it about once a month.

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Can also be used effectively in removing lime and other deposits from water jackets and pipes. Makes foul spark plugs good as new. Clean and simple to use. Doesn't affect the metal in any way.

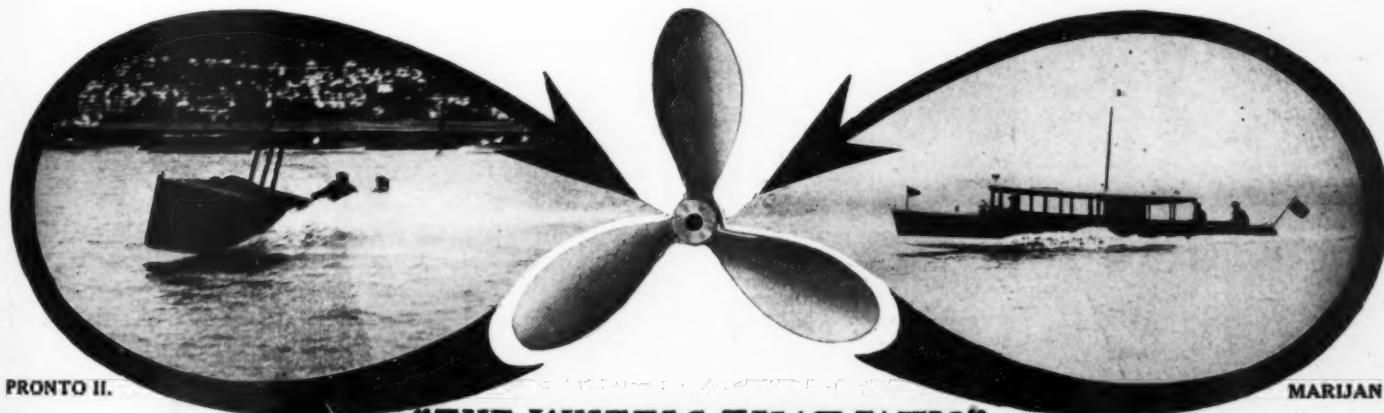
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We will promptly refund the purchase price to any dissatisfied user of genuine Prest-O-Carbon Remover. Beware of imitations containing kerosene or strong acids. Ask your dealer or write us.

Prices: Gal., \$3.75; Half Gal., \$2.00; Quart, \$1.00.

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Branches at New York, Astoria, Boston, E. Cambridge, Providence, Philadelphia, Pittsburg, Cleveland, Cincinnati, Detroit, Chicago, Milwaukee, Minneapolis, Kansas City, Omaha, Dallas, Los Angeles, San Francisco, Emeryville and Seattle.



July 22, 1910.
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Gentlemen—
I have one of your speed wheels which I won as a prize at the Regatta of the Mississippi Valley Power Boat Association at Peoria, July 4th, with my 20 foot boat "PRONTO II" and find that it increased the speed of my boat 1.8 miles per hour. I made some other changes in my boat which increased the speed considerably, but after doing everything in my power to obtain the highest possible speed the increase of 1.8 miles was due wholly to the change of wheels. I feel that the Columbian wheel is by far the best designed wheel on the market, and I have tried almost every make of wheel known. Thanking you for past favors and assuring you of my future patronage, I remain,
Yours respectfully,
(Signed) GEORGE E. SMITH.

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AND
"PROPELLERS IN A NUTSHELL"**
Sent free upon request
Every boat owner should have them.

New York, Oct. 1, 1910.
Columbian Brass Foundry,
Freeport, L. I.
Gentlemen—
You will I hope be pleased to learn that your 30 in. x 23 in. Style E Propeller has increased the speed of my boat Marijan nearly two miles and a half an hour. With wheels of other makes the best result obtained was 17.14—with your wheel 19.6 a gain of 2.46 miles. I made numerous trials and used the greatest care to secure accurate data.
Yours very truly,
M. ROOSEVELT SCHUYLER.

The percentage of slip with this propeller is 7 per cent less than with the wheel of another make of practically the same diameter and pitch.

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A few winners with Columbians in 1910:—

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World's Champion 20 footer
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Won \$1000 prize at Peoria
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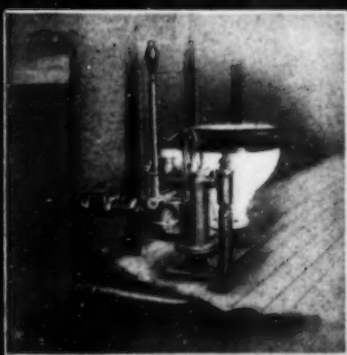
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Write for circular describing our new Manganese Bronze strut with universal Phosphor Bronze Greased Bearing
Hole reamed to size. Adjusts itself to any Angle. Made in sizes according to the drop.

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Installed with Pat. Outboard Connections

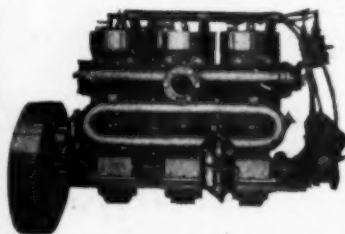
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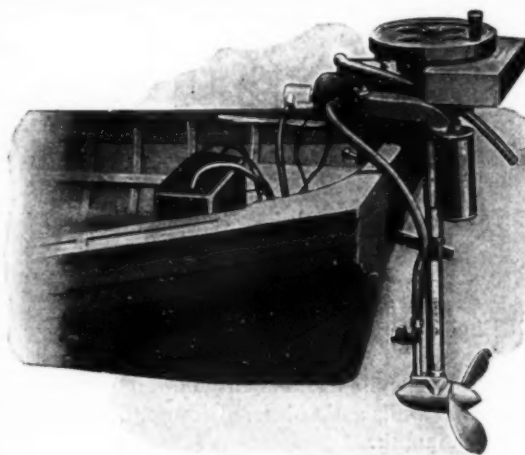
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The Gordon Reversible Propeller

Practically a solid wheel with reversing virtues. No trappy parts outside the stuffing-box to become clogged when reversing. No loose noisy blades. Perfect control of boat at all times without touching engine. Blades adjusted instantly to any position—forward, back, neutral, "feathering" and intermediate.



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If you are interested in an Extra High Grade, Moderate Weight Direct Connected Electric Light Plant, 2 and 4 cyl 4 cycle, 6 and 12 H. P. with Bilge and Air-Pump attached, ask for new bulletin. This is guaranteed the latest and best set on the market. We have also high grade 1 1/2 and 2 H. P. 2 cycle sets, new feature bilge and air pump attached.

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We can build your boat from standard designs or according to

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Write us today telling what your needs are, and we, without putting you under any obligation whatever, will tell you what we can do, how soon we can do it, and the approximate cost.

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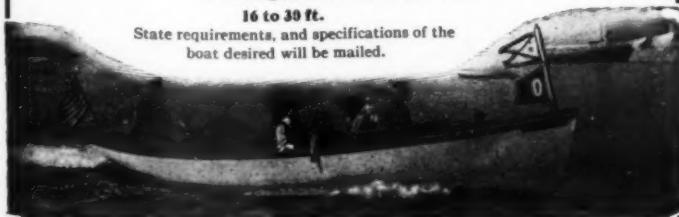
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Shallow draught, Noiseless, Noncapsizable, Safe for off shore boating, desirable anywhere.

16 to 30 ft.

State requirements, and specifications of the boat desired will be mailed.



A "Gurnet" Dory off coast of Maine

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OUR catalogue 60 gives this information. And remember that with a DESMOND FULL SIZED DESIGN to work from you are not limited to any one method of building a boat.

1. You can have the boat built by a boat builder.
2. You can build it yourself—do all the work.
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4. You can hire workmen to build under your supervision.

No matter which method you select, a 1911 DESMOND FULL SIZED DESIGN will enable you to get THE BEST POSSIBLE BOAT AT THE LOWEST COST.

THE DESMOND WAY is the modern way of preparing designs that actually eliminate guessing, laying down of lines, making of templates and the necessity of supervising construction. Catalogue No. 60 will be sent Free.

THE DESMOND CO.

NAVAL ARCHITECTS
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as here shown, prevents everything but the gas-making fluid getting into the carburetor. Even the highest grade gasoline will contain sediment and water that make carburetor troubles unless removed. Nothing but pure filtered gasoline comes out of our separator, all foreign matter stops at the diaphragm and is drained through petcock.



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The SEPARATOR is made from sheet brass, highly polished; weighs but seven ounces; the connections are made in two sizes, for 1/4 inch and 5-16 inch outside diameter tubing; and is ready to place in the gasoline line of any car or motor boat.

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Excels in design, workmanship and material. For cruising launches and commercial boats.
 Sizes 5 to 17 H. P., single and double cylinders. :: Send for catalog

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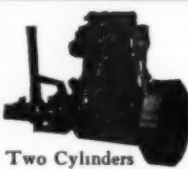
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FRISBIE

The Frisbie Motor is made in one, two, four and six cylinders, ranging from three to EIGHTY horsepower—four cycle.

It is simple, having all valves in the head of the cylinder. That means power.



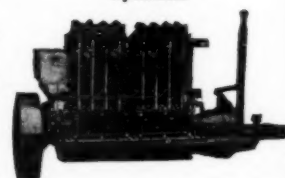
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An iron-bound guarantee that safe-guards you from loss goes with every Frisbie Motor sold.

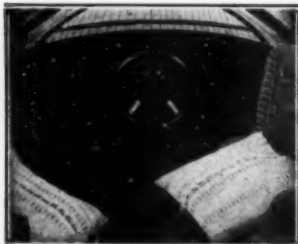
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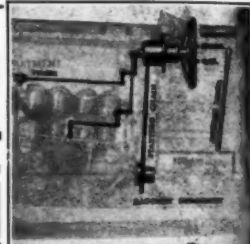
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Start your motor by a simple push and turn of the 'Steering Wheel'. Throttle and spark control at center. Simple effective and neat.

These Controllers have been in successful use on the celebrated Hanksraft Launches since 1904.

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Specify a Hanksraft Patent Motor Boat Controller for your new boat. Easy to install.



"Thru' the Tangle Like an Eel"

Ship from New York; Toronto; Jacksonville, Fla.

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Absolutely self-clearing in thickest weeds or grass.

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OPPORTUNITY PAGES OF MoToR Boating



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The "Schofield-Holden" is the Motor Boat most used in Canada—and Canadians should know good motor boats.

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Build Your Own Boat



This picture shows one of our 45ft. cabin cruiser frames ready to take apart and crate for shipment. Everything is done right up to the point where planking is to be put on. One man can re-assemble this frame and have it ready for planking in six hours' time. Any man, experience unnecessary, can finish this boat and fit it with power for less money than he would have to pay for the cheapest 25ft. cruiser offered by any manufacturer of completed boats to-day. We carry a full line, from the canoe to the 65ft. cabin cruiser.

Our Finished Boats

You may not have time to build your own boat. Cabin cruisers are our specialty. Write us and we will convince you that other manufacturers cannot meet our prices on finished boats. Let us quote on your specifications for a boat of any type.

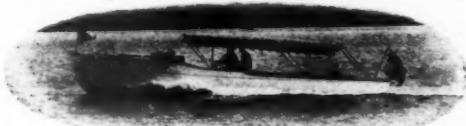
The superior excellence of our designs: beauty, seaworthiness, and speed in our boats; and a square deal and popular prices have brought us in the past five years from a small, unknown factory to rank among the largest and best known builders of both knock-down and completed boats in the land.

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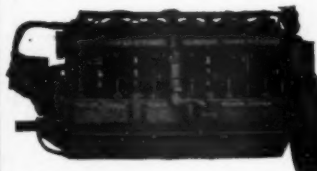


"ADVANCE" 37 ft. x 7 ft. Semi-Cruiser.

This boat won first prize at Interlake Regatta, Put-in-Bay, making 20 actual miles per hour, equipped with one of our 60 to 80 H. P. high speed motors. Can furnish this outfit complete. Price upon application.

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Made a flying trip over Lake Erie (Detroit to Buffalo) in 11 hrs. 5 min. without a hitch, the fastest time ever made by water. Won first prize at Elks' Carnival, cup and flag, speed over 32 mi. per hr. Can do flying mile in 1.47. Equipped with two of our 60 to 80 H. P. high speed motors. See article.



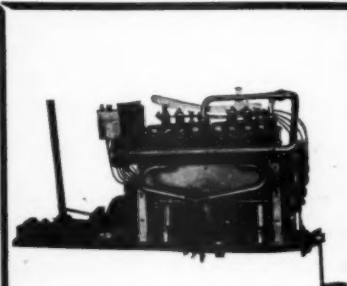
New York Branch, Gasoline Engine Equipment Co., 133 Liberty Street, New York, N. Y.

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1911 Models are now ready. 2, 4 and 6 cyl., 12 to 40 H. P. 4 and 6 cyl., 40 to 80 H. P. high speed. These motors are as good as mechanics and materials can make them, and will pay you to investigate. Price is right. Write for agents' proposition.

See us at New York and Detroit Shows.

VanBlerck Motor Co., Detroit, Mich.



Have you sent for the 1911 catalog of

Heavy Duty MOTORS

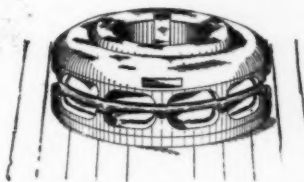
We will have a new 2 cylinder 6 x 9 ready for delivery about May first.

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WE HAVE FINE FACILITIES FOR HAULING OUT

Always Something New at DURKEE'S

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Suit for infringement of our patent rights has been brought against J. W. Durkee and C. D. Durkee & Co., and we propose to take further steps to protect our patent rights everywhere, both as to users and sellers.

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THE YANKEE MUFFLER
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Constructed of galvanized sheet steel, riveted seams, asbestos lined. Water cooled for boats. Will operate successfully on 2 or 4-cycle gasoline engine. NO BACK PRESSURE. ABSOLUTELY SILENT. Sizes: 1/2 to 150 H.P. Satisfaction guaranteed. Over 200,000 in use.

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The Yankee Whistle Outfit may be attached to any gasoline engine of any make or description in a few minutes. It takes no power from the engine. It has the only automatic CHECK valve that does not operate on compression. AN EXPLOSION MUST TAKE PLACE IN THE CYLINDER OR VALVE REMAINS CLOSED. Absolutely safe. No live gases can enter tank. Easily adjusted and requires no further attention. Polished four-tone chime whistle, galvanized air tank—equalizes engine pressure—valve closes automatically. Also provided with safety valve. Fills every requirement of the law. Satisfaction guaranteed.

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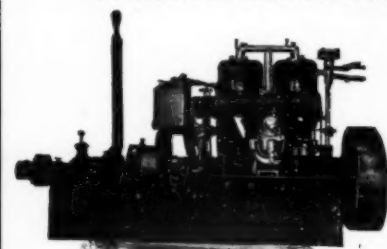
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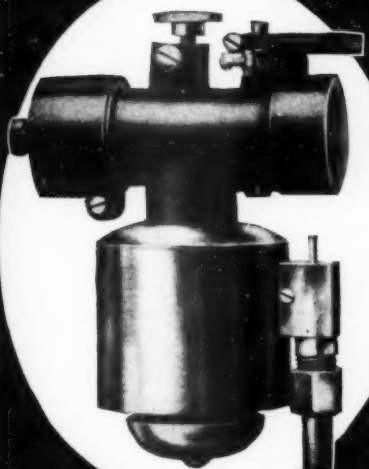
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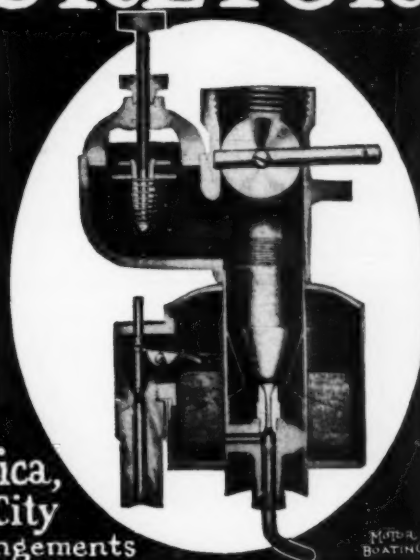
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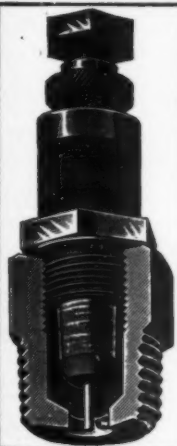
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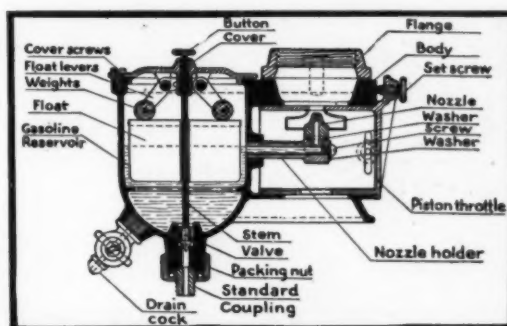
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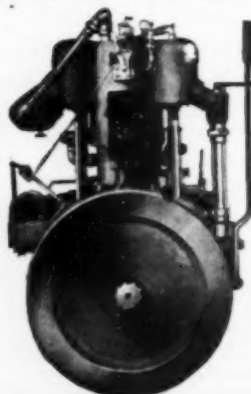
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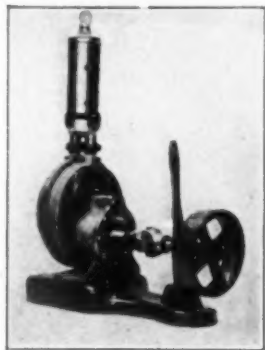
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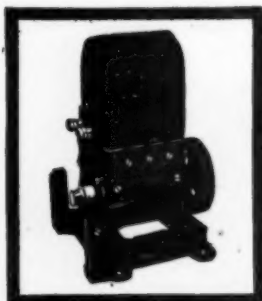
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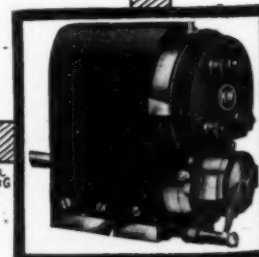
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We might use pages of this good magazine in describing the wonderful simplicity, the clean and graceful lines, the compactness and the splendid materials and workmanship in this new motor.

But there is nothing like seeing it for yourself.

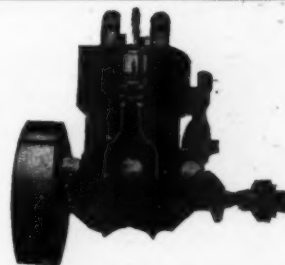
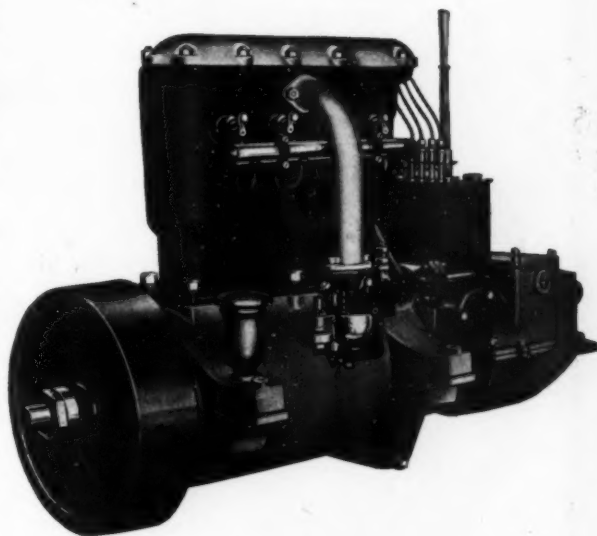
A four cycle motor with not a spring of any kind, nor a cam shaft nor a push rod in its construction, has "arrived."

We state, without reserve, that we have perfected the greatest improvement in gas engines, that has been brought out in many years—and we ask nothing better than a chance to prove our assertion to all who are interested.

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Reynolds Motor Company
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Some 1911 Features

There Are Others
 Ignition—Perfix, Jump-Spark, Make-and-Break.
 Reverse Gears—"Built-in" or Separate—all styles.
 Lubrication—Put oil in gasoline—1 pint to 5 gals., but we give user the option, as we equip every motor also with our regular sight feed automatic oiling system.
 Cooling—Plunger or Rotary Pump.
 Carburetion—Optional, 2-3 port auxiliary.

This fine manufacturing plant provides one of the largest and most completely equipped plants in the East, devoted exclusively to the production of Lackawanna Valveless Motors. Since the Lackawanna motors were first put on the market we have contemplated such a proposition as this,—a big factory located entirely among tidal waters and with shipping facilities of the best. For thirteen years we have kept on steadily growing and building, perfecting and succeeding with the one type. We originally put out, thirteen years ago, the first practical Three-Port Valveless design. We have put out many simplified improvements from time to time. Every Lackawanna motor turned out from the beginning was calculated to give good service and many of them even with a record of ten years or more use are giving active satisfaction today. Our new factory is located directly on the Hudson River with 1,000 feet of water frontage (twenty-five feet of water to dock) where Central Hudson Steamboats can land for freight, which, together with railroad switch along rear of factory, gives shipping facilities unsurpassed. The Lackawanna Motors for 1911 are being produced by the most modern equipment of machinery and brains that money can provide.

Lackawanna Valveless Motors for 1911

THE WORLD'S SIMPLEST—Built for Heavy Duty—Medium—or Speed Work.
 No marine gasoline motor has fewer parts than the Lackawanna Valveless. None has better or more carefully machined and treated materials entering into its parts.

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The Double-Cylinder Model
 Balances Impulses—Increases Power
 (They are fast supplanting the single cylinder motor.)
 The en-bloc, one-piece cylinder construction, results in increased efficiency, perfect cooling, economy of gasoline, freedom from vibration and long life. Our motors are Guaranteed.

Built in one, two, three, four and six cylinders, 2 to 45 Horse-Power per motor, either jump or make-and-break low tension spark for battery or magneto; also electric light, pumping, refrigerating, and stationary motor plant. Prices, \$75.00 upwards.
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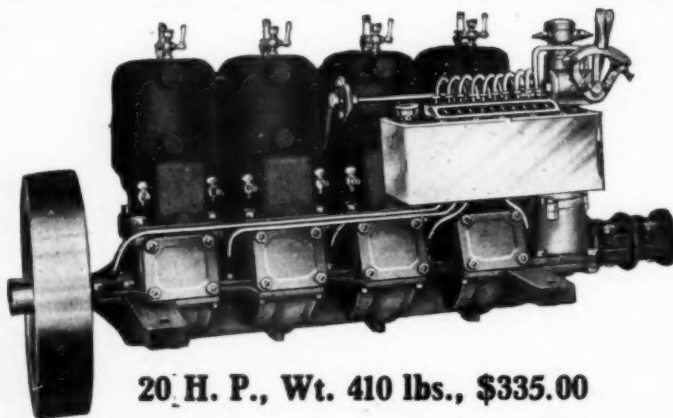
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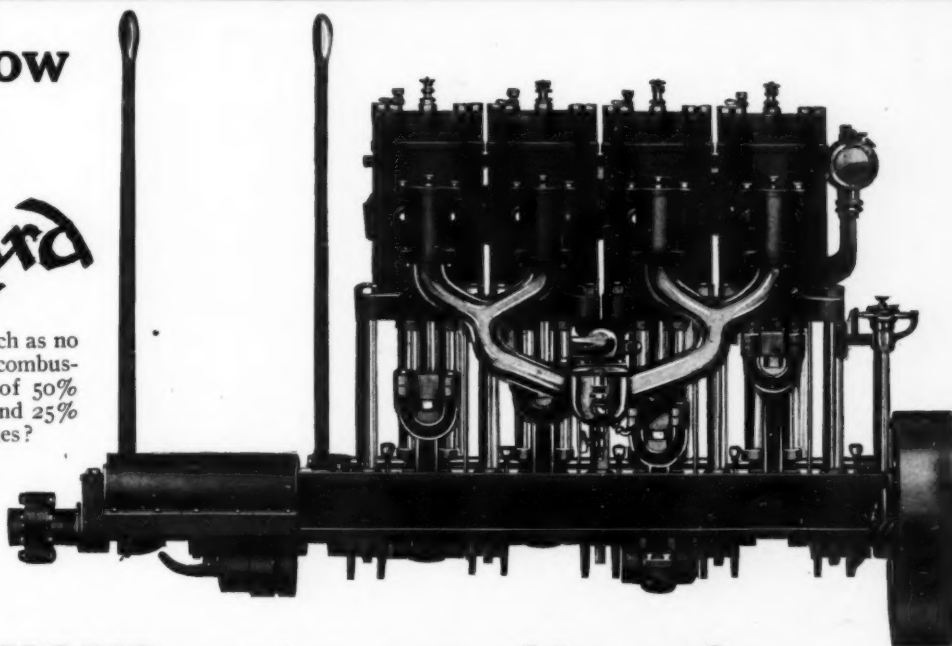
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The VANGUARD is the most RELIABLE, POWERFUL, and EFFICIENT engine on the market. The lever nearer the cylinders is the mechanical starter. It is SAFE and SURE. The "TWO-in-ONE" TELESCOPIC, UNIVERSAL JOINT does the work of two of the ordinary joints. It is the only shaft coupling that does the trick.

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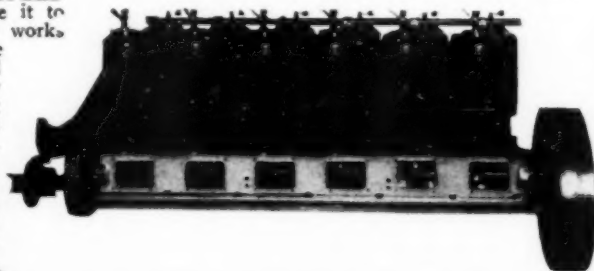


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Is made in two sizes, 4-cylinders, 35 h.p. and six cylinders, 70 h.p. (heavy duty engines also if you want them, it's all in the free catalog). Our complete-boat department will build you a speedy runabout or a fleet racing craft, install the engine and guarantee the speed or no sale. NAME THE SPEED you desire and we will give it to you. Our boat and engine works.

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Perflex WATER-PROOF POWER-ADDING Ignition

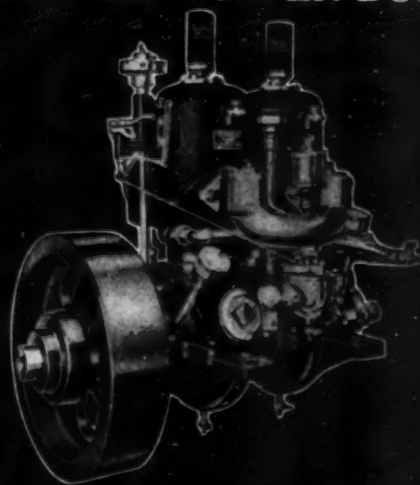


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"Perflex" Ignition is regular equipment on all the famous Gurnet dories and launches of the Atlantic Co.

58% OF ALL POWER-BOATS



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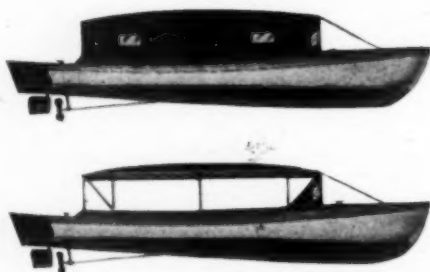
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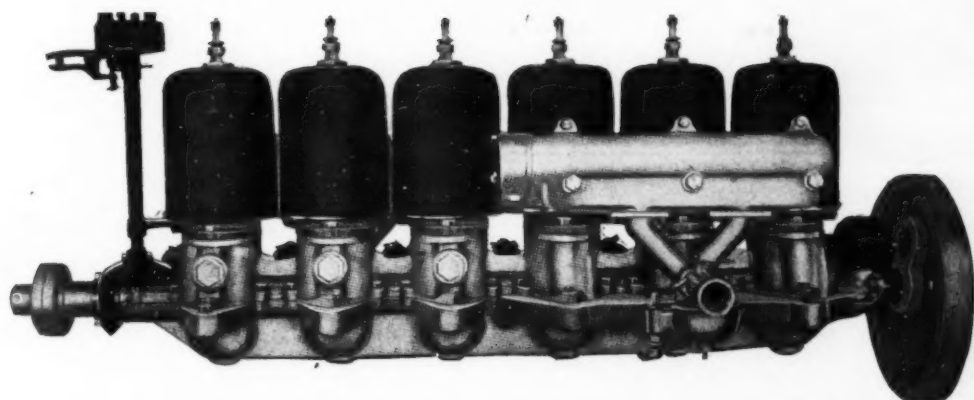
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This engine in almost any kind of racing hull will enable you to win every race in which your boat is entered---will give you the fastest motor boat afloat.

PIERCE-BUDD SIX CYLINDER

They are high speed, long-living, always reliable marine motors—if you want those qualities in the engine you intend getting for your boat, thoroughly investigate the PIERCE-BUDD.

We stand ready to prove to you beyond all doubt that the PIERCE-BUDD is the motor you need—that it will give you the speed you want, together with the durability and reliability of a slow-speed, heavy-duty engine.

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**Pierce-Budd Motors are Made in Various
Sizes—from one to six cylinders.**

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MOTOR BOATING

FERRO



The Engine That Mastered Niagara

Learn More About This Engine

In its design, mechanically correct, you will find the principles making for maximum efficiency, reliability, durability, economy, ease of operation, and simplicity—engine factors upon which depend so much of the pleasure and serviceability of motor boats.

As in other seasons, so in 1911, the Ferro is again years ahead of all other marine engines in design. The improvements are absolutely new ideas, bound to be of the utmost value to the motor boatist—a distinct addition to that remarkable efficiency and reliability which enabled Capt. Larsen to master the wild Niagara Whirlpool Rapids. Investigate.

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A thoroughly reliable carbureter working in unison with a highly efficient timer gives the 1911 Ferro the most positive and flexible control of any marine motor. This Timer-Carbureter Control means an easy starting and quick responding engine. It also means greater economy of fuel consumption and absolutely eliminates backfiring.

A simple butterfly valve in the air intake elbow on the carbureter is automatically operated by a rod from the timer. Because a proper mixture of gasoline and air meets the requirements of the spark at all times, you can run a Ferro "wide open" and instantly go to the other extreme without a sign of a sputter.

High Tension Magneto Ignition

High Tension Magneto Ignition, the most efficient form known, and identical with that used on the best automobiles, is now obtainable with Ferro Motors—the first time this system has been generally installed on two-cycle marine engines. No unburned "gas charge" goes out through the exhaust to be wasted. Means more power with less gasoline. Absolutely waterproof and short-circuitproof. Minimum number and length of wires. Positive hot dynamic spark starts the engine on the first turn of the crank.

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This Book Helps Solve Your Motor Boat Problems

Send for our large 1911 Catalog containing much valuable marine motor information, also Helpful Information Blank. Properly filled out, this blank goes to an experienced boat and engine man, who takes up your requirements in detail and helps you select the outfit best suited to your needs. This puts you under no obligation to buy whatever.

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Their design is the most modern product of naval architects' utmost skill. Old-style boats are not to be compared. Always the greatest value in power boats for the money, Mullins Steel Motor Boats are offered at



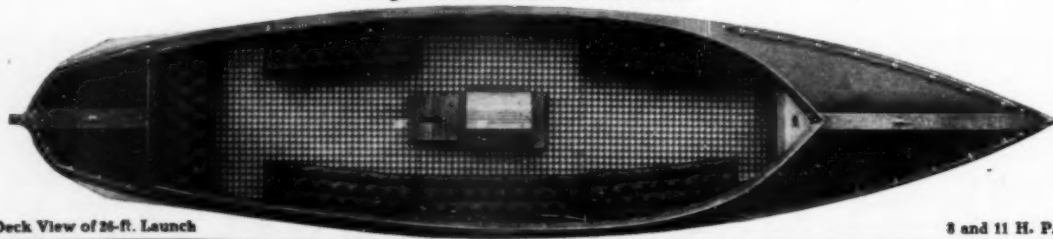
Complete Line of Row Boats and Duck Boats—Prices \$22 to \$39.

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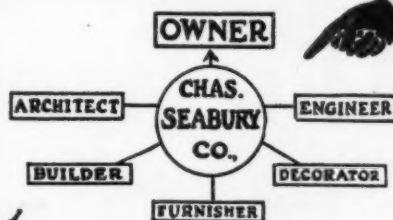


Deck View of 26-ft. Launch

8 and 11 H. P.

CENTRALIZE RESPONSIBILITY

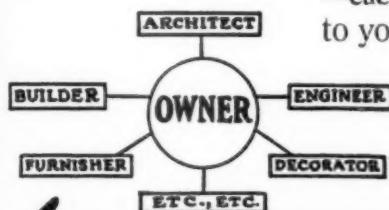
when you have your boat built



If you tell one concern that you want a boat built thus-and-so, and that you will hold that firm responsible for the product, you are sure of getting what you want down to the last detail.

But if you order an architect to design your boat, a boat builder to build the boat, an engineer to design or install the engine, etc., etc.

—each one is responsible to you for only the work he does.



**DIVIDED RESPONSIBILITY
MEANS THAT YOU CAN HOLD
NO ONE RESPONSIBLE**

Yet a mistake on the part of any one of them will spoil the whole boat—while the others will justifiably demand payment for the work they have done.

Centralize the responsibility. Go to the Gas Engine and Power Co. and Chas. L. Seabury, & Co., Consolidated, who can design, build, power, furnish and decorate your boat ready for immediate use, in their own plant—and who guarantee every detail as you want it.

What kind of a boat do you want?

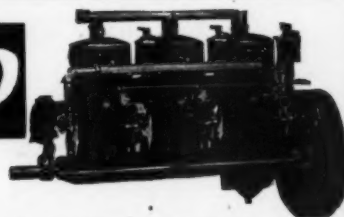
For any kind, from a dinghy to an ocean going cruiser, consult with

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And **CHAS. L. SEABURY & CO., Consolidated**

MORRIS HEIGHTS, NEW YORK

Engines \$39.50 up



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**NOW IS THE TIME TO INFORM YOURSELF
ABOUT THE ASTOUNDING DUBRIE**

DuBrie Motor Company

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THE REMINGTON OIL ENGINE

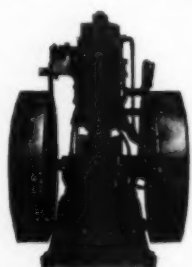
NO

**VALVES
GEARS
ELECTRICITY
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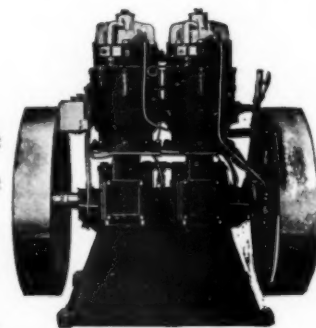
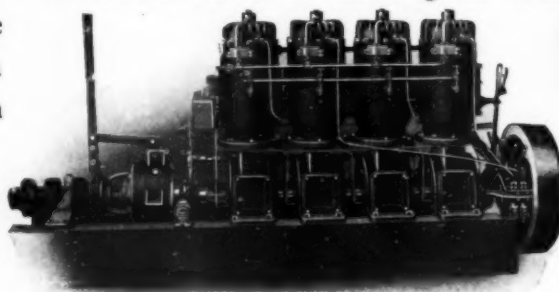
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**RELIABLE
ECONOMICAL
SIMPLE
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NOT a gasoline engine with oil attachment. You have heard some people knock the "Oil Engine?" Write us about it, all "Oil Engines" are not alike. As an instance, we have sold one consumer (not a dealer) over \$12,000.00 worth of engines on repeat orders.



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The cost of operation is way below the cost of operating a steam engine or gasoline engine.

Middle West Representative

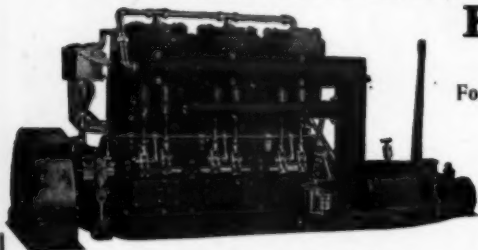
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1315 Chemical Building, Olive and 8th Streets, St. Louis, Mo.

The Remington Oil Engine Co., Stamford, Conn., U.S.A.

"WOLVERINE"

"The Motor With the Bore and Stroke"



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4 Cycle. 5 to 100 H. P.

For Pleasure and Commercial Service

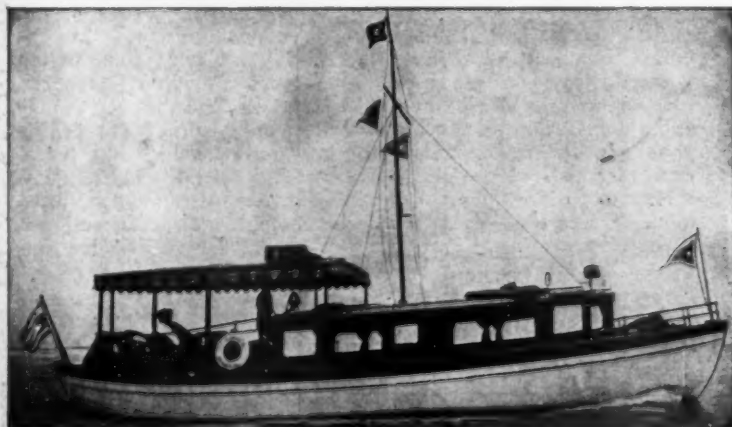
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Upper cut shows tugboat "San-San" with 27-H.P. "Wolverine" Engine, towing 19 Banana Lighters against a three-mile current at Panama. Lower cut shows Danish seagoing power cruiser "Selene," 80 ft. O. A., 36-H.P. "Wolverine" Engine

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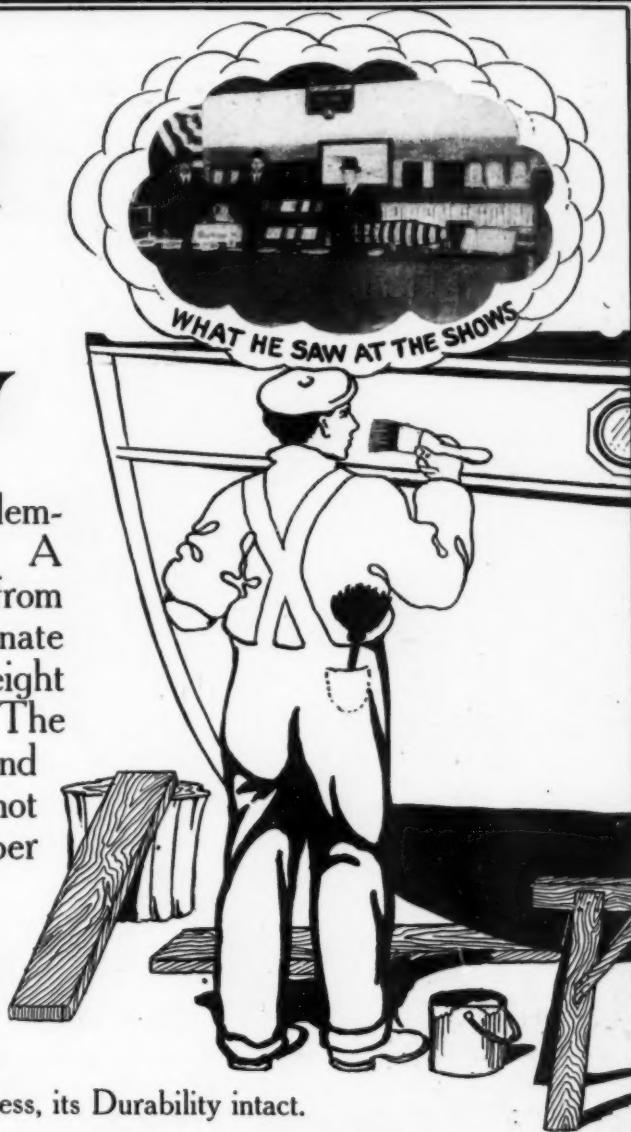
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VALSPAR WILL NOT TURN WHITE

The others---all others---WILL, some quickly, some slowly, but the end of the Test leaves VALSPAR alone unharmed---its Color, its Brilliancy, its Hardness, its Durability intact.




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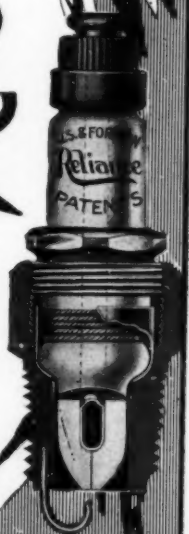
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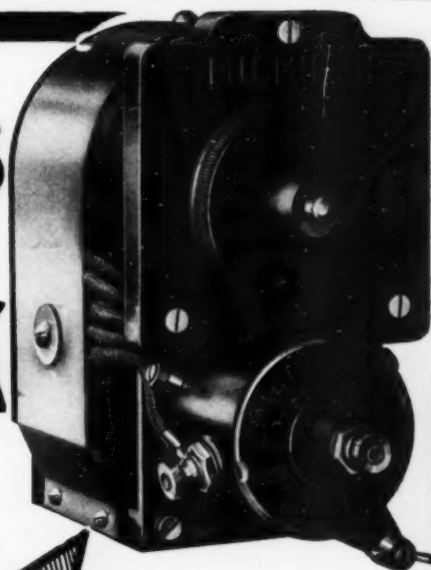
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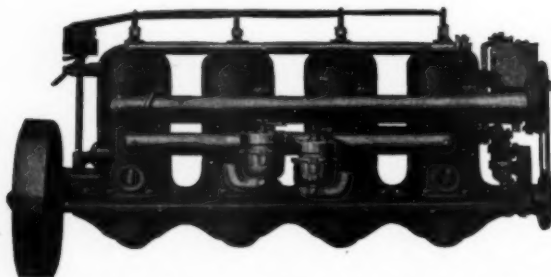
GIVES a red hot spark at the first turn and keeps the voltage right to always get the best results. This magneto is designed by a man whose name is associated with things electrically excellent. It is built in a perfectly equipped shop, by expert workmen. The material is better than that entering into the highest priced "so-called" imported magnetos which are assembled on this side to avoid the American Import Duties. Our GUARANTEE covers material, workmanship, running qualities and satisfaction. Every engine user, every interested person should inform himself about the new features of this astonishingly perfect spark-maker. THE MICHIGAN SYSTEM allows the engine to be started on the spark.

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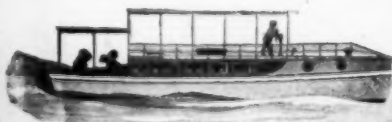
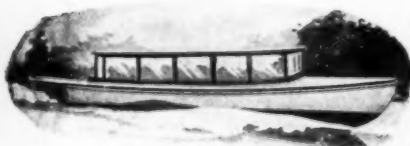
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This catalogue is a splendid book of reference for anyone interested in the marine game, containing as it does, an up-to-date treatise on installation and operation of marine gasoline engines, and also a chapter on the care and handling of sail craft, both written by men who know. If you already have a copy of the catalogue, you should also have a copy of our 1911 discount sheet and supplement.

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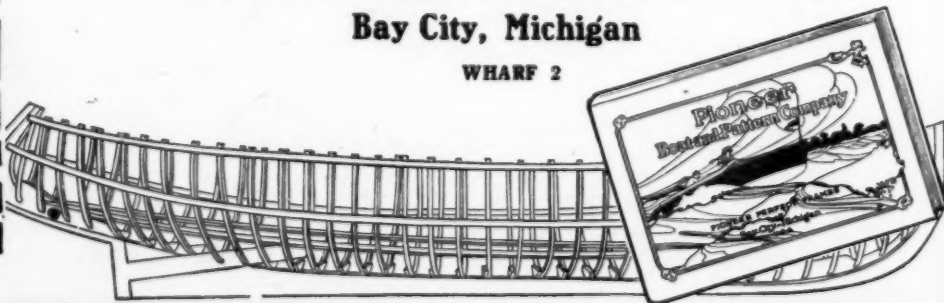
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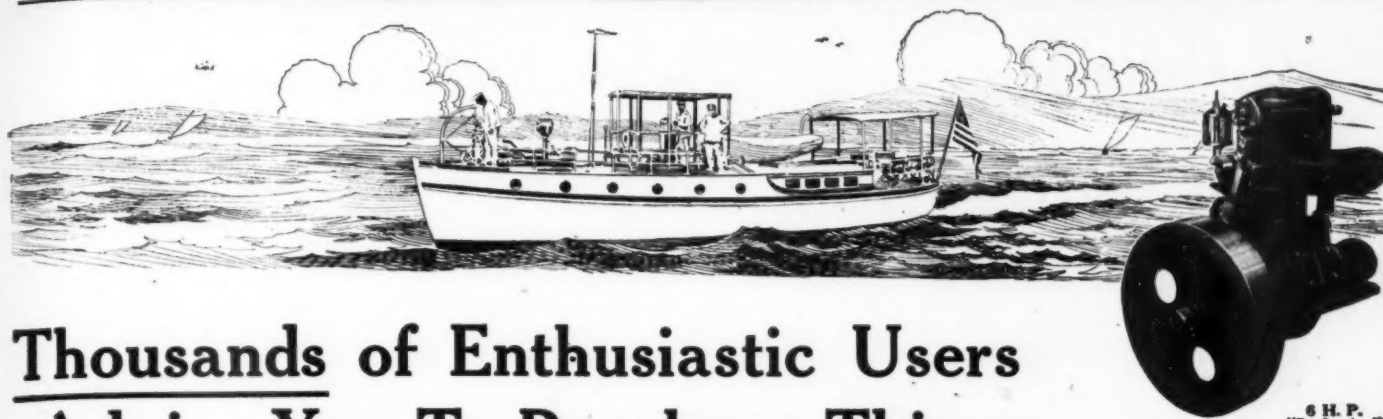
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If you, in deciding on what motor you are going to get for your boat, referred to these people, they without exception, would tell you to get a "Perfection". They would tell you this not so much because they are using "Perfections" now but because for the most part they have used other engines before and

have had experience in towing other engines into harbor.

Many of these letters read like stories. They tell of experiences on river and lake that may be very much like happenings in your own boating history. They point out to you wherein "Perfections" excel, wherein they do things in the way boatmen want them done. These people write in the very natural manner which shows the letters are genuine and every word absolutely reliable. Write for a set of their letters. We'll be glad to send them to you.

"Perfection" Marine Motor In Every Respect Worthy of the Name

We want you to consider this name "Perfection". It was not given to our motor carelessly or because someone had a sudden idea. We call our engine the "Perfection" because we believe this word most adequately describes it, conveys to the mind its distinct character. Every part of the "Perfection" is perfection itself—brought to a point where it is impossible to improve. There is nothing to get out of order, nothing to pile up repair bills. Some of our users have written us that they have run "Perfections" for years without a penny spent for repairs or overhauling. Some of these men were green hands at motors when they began using "Perfections." But anyone—

man, woman or child—can run a "Perfection" without the slightest difficulty. It starts easily. Requires very little attention. A free flow of gasoline and a good spark and she keeps the boat hustling along mile after mile at a great old rate. There are no heavy vi-

brations. You are not disturbed by strong "pounding." The "Perfection" has a smooth even purr that is pleasant to the ear, that gives a sense of speed and power under marvelous control and being delivered in the efficient and economical way.

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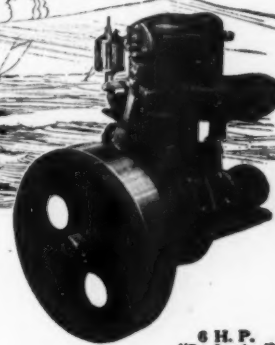
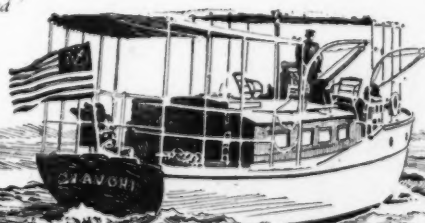
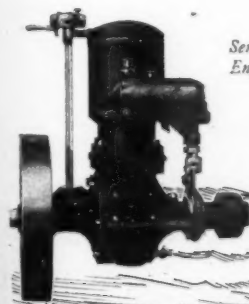
We have a strict rule in our factory from which there is absolutely no appeal. Every part must be inspected. From the time the metal is shaped until the finished parts appear experts watch closely every move of the workmen. Every minute every item is scrutinized. Not a detail escapes notice. Everything that goes into a "Perfection" has to be perfect and if it does not measure up to

our standard it has to be done over. We have another rule—a real law in the Caille factory—and that is that every engine must make good under a working test before shipment. Each "Perfection" is put to work turning a propeller in a tank of water and it has got to "show us" that it will do more for you than we claim it will—that it will always test above the specifications.

CAILLE PERFECTION MOTOR CO.,
103 Caille Street, Detroit, Michigan

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2 H. P.
"Perfection"



6 H. P.
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Free Book For Boat Enthusiasts

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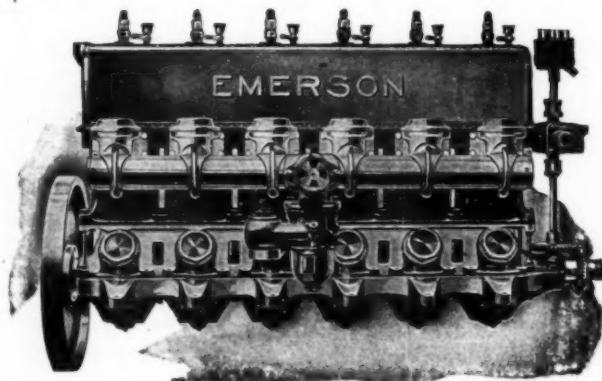
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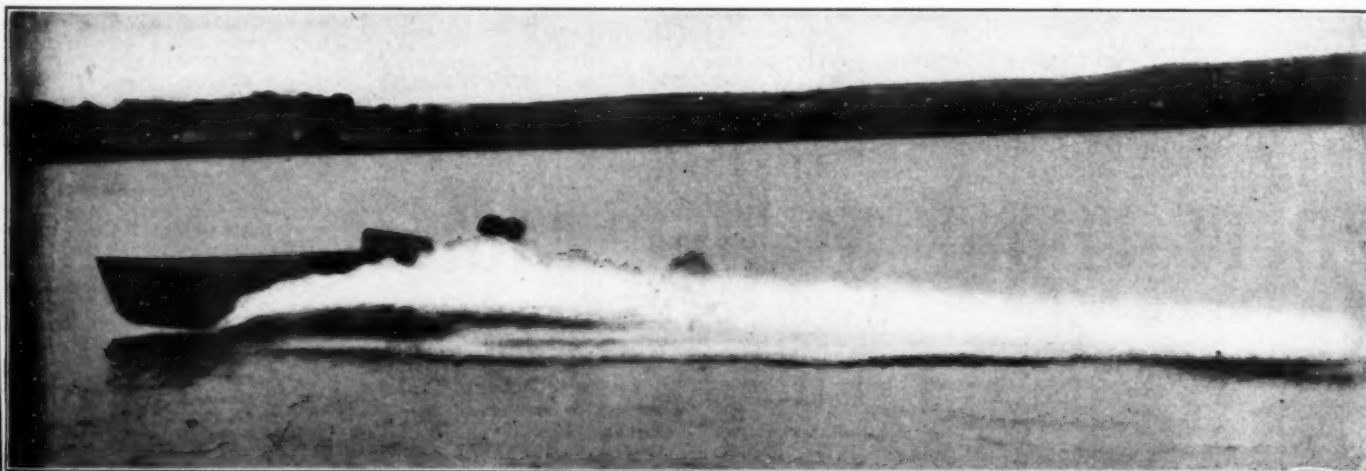
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World's Records and Performances of the EMERSON ENGINES

THESE engines are built by workmen most of whom were selected from the United States Gun Factory at Washington, with special machinery that insures a great accuracy; steels of exceptionally high tensile strength and toughness are employed wherever possible, even the fly-wheel centers are of high carbon saw-plate ground and oil-tempered to insure great strength and lightness. The crank-shaft has over thirty inches of bearing surface to insure against frequent adjustment. The engine is practically finished all over, the composition base is scraped all over and the copper jackets, manifolds and inspection plates highly polished, making the most attractive engine ever constructed. Our exceptional facilities enable us to give the quality and power at the right price while our design provides for eliminating the unnecessary weights of cast iron, heretofore necessary in engine construction. With this engine a light weight boat can be constructed that is seaworthy and with a surplus strength to carry the motor, at from \$200 to \$400 that will, with a certainty, far surpass in speed and comfort any boat carrying a heavy motor with a necessarily proportionately heavy boat regardless of power or cost. With our engine, the moving parts being light and strong, eliminates the disagreeable vibration produced by heavy motors. The following results show that no engine of any make has ever before been able to produce such marvelous speed and endurance as the "Emerson" and, in ten days' racing, in competition with the fastest boats in existence, has won more important races, carrying with them cash prizes and valuable trophies, than all the rest of the various makes of engines combined.



Emerson Six Cylinder Racing Engine
100-125 H. P. Weight 300 pounds



"Emerson" World's Twenty-six-foot Champion, 36.1 Miles per Hour at Washington, D. C., August 20, 1910.

Winner 26-foot free-for-all championship Western Power Boat Association.
Winner 32-foot free-for-all championship Western Power Boat Association.
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Winner Blue Pennant given by "Motor Boat" for Western Speed Championship.
Winner Carpenter Cup representing Speed Championship, Hudson River Yacht Racing Association.
Winner Lukenheimer Trophy, Ohio Valley Carnival.
Winner Corinthian Yacht Club Trophy, Speed Championship, Potomac River.
Winner Marshall Hall Trophy for speed championship.

Holder of World's Record for 26-foot displacement boats in competition surpassing in speed the records of such well-known boats as Independence, champion of W. P. B. A., 1908; Hoosier Boy, champion W. P. B. A., 1909; Red Top II, champion of Mississippi Valley 1910; Scripps, Mascot, Comet, Disturber, M. V. 11, Syracuse, Eldredge V, Gun Fire II, Elmer L., or any other boat that has ever raced on the courses of the Mississippi Valley, Western Power Boat or Hudson River Yacht Racing Associations many of which were equipped with engines of from two to six times the cylinder area of the Emerson's engine. In all of her races this boat has carried two heavy men, weighing over 185 pounds each, and her hull is substantial, strong and seaworthy, weighing over 600 pounds and is not a racing freak. The above performances have been made possible by our new four-port system, 300 pound engine, far surpassing any motor ever built for workmanship, finish, design, or power to pounds of engine weight.

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"SANDS" MARINE SANITARY FIXTURES

Mark the Distinction Between the High Grade and the Commonplace



PLATE S-34

The "Knockabout" Improved Pump Water Closet, round flushing rim bowl, composition foot valve. Oak seat and cover; heavy N. P. brass post hinges. Pump rough, finished trimmings, oak seat and cover, add... \$52.50 If mahogany seat and cover, add... 1.50 Weight: Net, 45 lbs.; gross, 75 lbs. This fixture is a light and compact pump water closet, especially designed for small yachts and launches where both space and weight are essential details.



PLATE S-30

The "Arbutus" Pump Water Closet, flushing rim bowl, composition combined supply and waste, pump, self-closing foot valve. Oak seat and cover, N. P. brass post hinges. Pump and fittings polished and N. P. all over; white enameled iron base plate, add... \$115.00 If mahogany seat and cover, add... 2.00

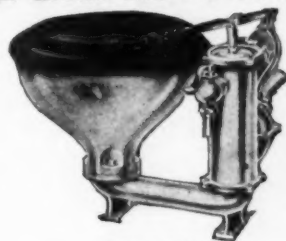


PLATE S-36

The "Elton" Improved Pump Water Closet, with Vitro Adamant round flushing rim bowl, self-closing composition supply valve, oak seat and cover with rubber bumpers, and nickel-plated post seat hinges. Complete as described... \$45.00 If with mahogany seat and cover, add... 1.50 If pump is white enameled with nickel-plated trimmings, add... 5.00 Dimensions: 14 in. wide, 18 in. front to back, 14 in. to top of seat. Weight, Net, 45 lbs; Gross, 75 lbs.



PLATE S-38

The "Marco" Improved Pump Water Closet, oval pedestal bowl cabinet finished oak seat and cover; heavy N. P. brass post hinges; high-grade composition 3 in. combined supply and waste pump with automatic safety water supply foot valve, polished trimmings, pump rough. Complete as shown and described... \$75.00 If mahogany seat and cover, add... 2.00

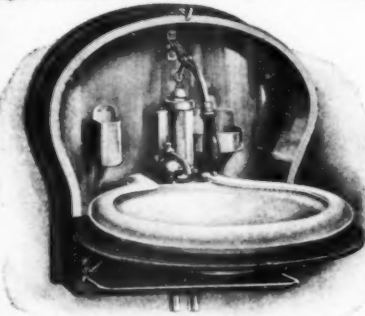


PLATE S-150

The "Glenwood" Folding Lavatory, with Vitro-adamant roll rim lipped oval basin, N. P. copper lining, soap and brush holders, N. P. brass pump, towel rack, N. P. brass trimmings. Quartered oak, polished finish... \$42.50 Mahogany, polished finish, add... 1.50



PLATE S-750

Double Acting Brass "Auto" Bilge Pump. 15 inches long under spout, 5 feet rubber hose and coupling, heavy pattern. No. 1, 1 1/4-inch diam... \$3.00 No. 2, 1 1/2-inch diam... 4.50 No. 3, 1 3/4-inch diam. 24 inches long, with foot rest... 5.50 Price... \$35.00

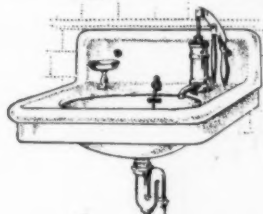


PLATE S-145

The "Hobron" Vitro-Adamant Glazed White All Over Folding Lavatory, N. P. brass supports and bulkhead brackets, N. P. brass combination self-closing faucet for hot and cold water. Complete... \$45.00 Weight: Net... 45 lbs. Gross... 75 lbs. Dimensions: Height over all... 30 1/2 ins. Width... 16 1/2 ins. Depth, open... 17 ins. Depth, closed... 7 ins.

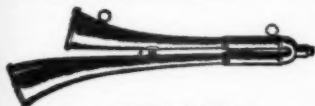


PLATE S-1285

Motor Boat Signal Two-Tone Horn with mouthpiece. Fulfills the U. S. Government requirements as signaling device for small boats. Highly-polished brass and nickel-plated. Length 10 1/4 inches. Style "A"—Arranged with rings for fastening cord. German Silver mouthpiece. Polished Brass... \$2.25 Style "B"—Arranged with bracket to screw to deck, blown through Removable Extension tube. Polished Brass... 2.25 Mohair-Covered Rubber Extension Tube, length 3 feet, with Mouthpiece and connection to horn... 0.75



PLATE S-1001

Round Frame Composition Port Light, with one clamp, for wooden vessel.



PLATE S-123 1/2

Polished Brass Deck Plates. Heavy Weight Guaranteed. Plate S-975 Plate S-976 Plate S-977 Plate S-978 Plate S-979 Plate S-980 Plate S-981 Plate S-982 Plate S-983 Plate S-984 Plate S-985 Plate S-986 Plate S-987 Plate S-988 Plate S-989 Plate S-990 Plate S-991 Plate S-992 Plate S-993 Plate S-994 Plate S-995 Plate S-996 Plate S-997 Plate S-998 Plate S-999 Plate S-1000

All Cast Bronze Heavy Pattern Combination Inlet Connection with Strainer and Scoop.

Iron Lead No. Size, Pipe, Pipe. 0. 3/4 in., \$2.25 \$2.65 1. 1 in., 2.50 2.90 2. 1 1/4 in., 3.00 3.40 3. 1 1/2 in., 3.75 4.25 4. 1 3/4 in., 4.50 5.00

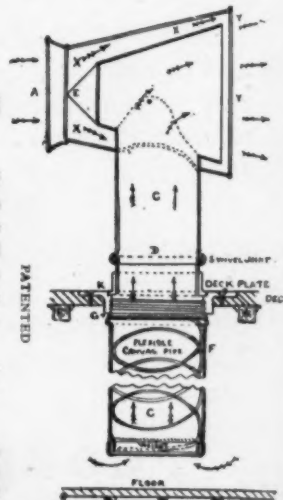
AUTO-FORCE MARINE AIR-PUMP

WE HAVE THE EXCLUSIVE RIGHT TO MANUFACTURE FOR MARINE USE PROTECTS YOUR LIFE AND BOAT, PUMPS OUT GASOLINE FUMES AROUND THE ENGINE, AND FOUL AIR FROM TOP OR BOTTOM OF ANY COMPARTMENT

The air entering at A is split or spread out by the point E of the inner cone into a ring of air of constantly increasing diameter, but decreasing area of cross section, while passing through the space XX. Since the pressure at A remains constant and passage of air around the outside cone tends to decrease the pressure in front of exit YY, the ring of air emerges at increased speed at YY and draws the air within the inner cone out with it. The only feed possible to the suction created in the inner cone is the connecting pipe C, and as this partial vacuum in the inner cone must be filled, it causes a rush of air up the pipe C, this rush being necessarily continuous as the pull of air at YY never ceases.

A detachable canvas hose F, of which the upper end has a brass ring which screws into the bottom of the deck plate K. The hose is fitted with copper rings which keep it expanded and a heavy ring fitted at the lower extremity which keeps it in place.

	4"	5"	6"	7"	8"
Galv. Iron	\$20.00	\$25.00	\$30.00	\$35.00	\$40.00
Polished Brass	26.00	32.50	39.00	45.00	52.00
Polished Copper	29.00	35.00	42.50	49.50	57.00



PATENTED

Complete line of closets, lavatories, portlights, deck plates, basin and galley pumps described in catalog "R" sent upon request

A. B. SANDS & SON COMPANY

Largest Manufacturers in the World

MARINE PLUMBING SPECIALTIES

22-24 Vesey St., New York, U. S. A.

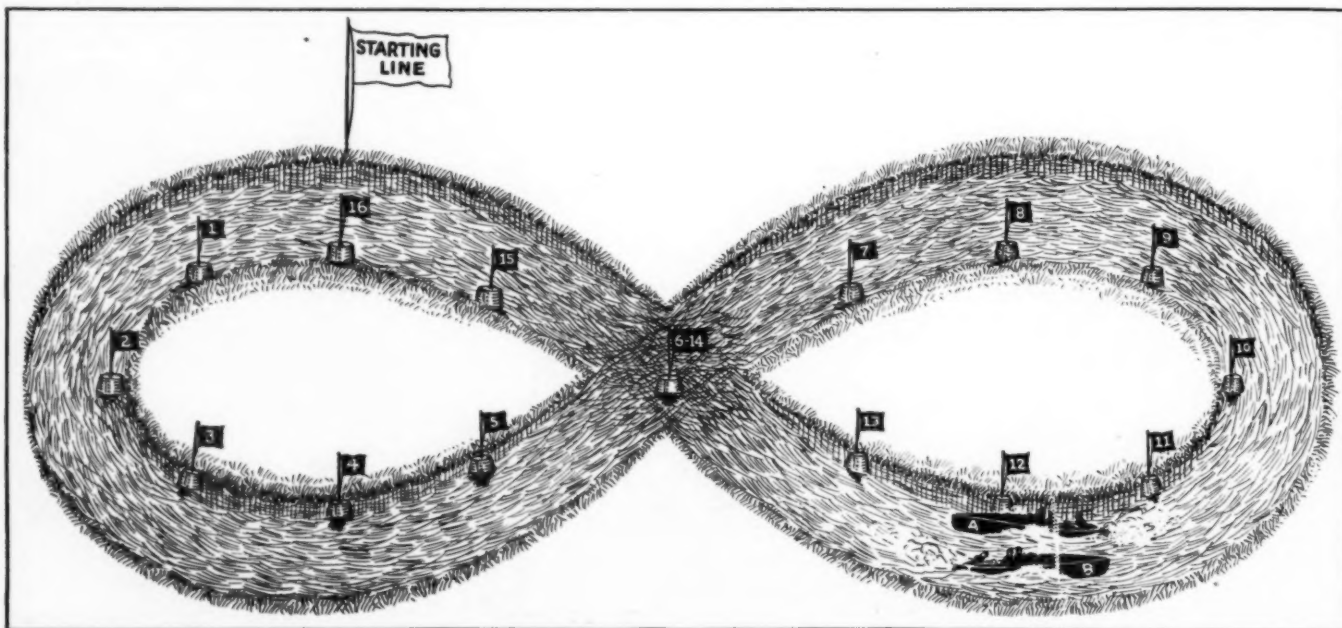
1849—"PIONEERS FOR OVER SIXTY YEARS"—1911

MOTOR BOATING'S MOTOR BOAT RACE PUZZLE

COPYRIGHT BY SAM LOYD

\$100.00 IN CASH PRIZES

HERE is a "figure eight" 16 mile racing course. Two motor boats pass the starting line at the same moment but in opposite directions; each boat runs at its maximum speed. The point at which they pass for the second time, not counting the start, is shown in the illustration. At what point do they pass each other for the third time?



\$50.00

will be paid to the person who sends in the correct answer accompanied by the best explanation of how he worked out the problem. If more than one correct answer is received

\$25.00

will be paid as a second prize for the second best explanation of the method used in solving the puzzle, and if enough correct answers are sent in a third prize of

\$15.00

and a fourth prize of

\$10.00

will be awarded to those who send in the third best and the fourth best explanations respectively.

CONDITIONS

READ THESE CAREFULLY

1—This contest is freely open to all, but answers must be addressed to the Puzzle Editor

of MoToR BoatinG, 381 Fourth Avenue, New York City, and must reach him on or before March 31st, 1911.

2—The name and address of the sender must be clearly written on each answer and all answers must be written on one side of the paper only.

3—Inasmuch as some one may happen through chance or accident to hit upon the correct solution of this puzzle and as we intend that this contest shall be a test of skill and reasoning power, each answer must be accompanied by a simple explanation of how the problem was worked out.

4—Prizes will be awarded as herein indicated. All conditions of the puzzle are in this announcement.

5—The publishers of MoToR BoatinG are to be the judges in awarding the prizes and their judgment must be accepted as final.

6—No employee or relative of an employee of MoToR BoatinG is permitted to compete.

Eagle Marine Engines for 1911

OUR REALIZATION

ANNOUNCEMENT

OUR NEW FACTORY

It is with pleasure we announce the opening of our immense new factory with a capital of \$1,500,000, at 98 Warren Street, Newark, N. J., fitted with the most modern automatic machinery (many of which have been constructed from designs of our own engineers, and the like of which cannot be found even in the most up-to-date automobile factories). This will enable us to build engines for marine service of such accuracy and interchangeability as the Public has never imagined possible.

In acquiring this new home we have installed one of the finest and most complete foundries to be found anywhere. This feature facilitates our work, makes us independent of outside delays, and enables us to maintain a standard in material which we have always desired. We have also installed a complete set of ovens for baking the enamel finish on our engines, which for years has been one of their distinctive marks of elegance.

This new factory is the realization of years of planning. We have dreamed of a factory for the housing of our engine business such as we now possess. We have planned to use just such wonderful machinery and to utilize our perfect organization in the manufacture and sale of Eagle Engines, and to think this period is now at hand, that our anticipations are now realities, and that these facilities and conditions will enable us to benefit all users of marine engines, we assure you the penning of these lines is an exceptional event in our career.

"EAGLES" ONLY

The public, as well as our agents, must appreciate the value of our copyright name "Eagle" as applying to marine engines. We have never failed to supply parts for an engine bearing this name, even though at times such parts have cost us many times more than the sale price. Our policy is to care for our customers. Eagle Engines have never been sold under any other name; from year to year they remain "Eagles" for the reason that our machines are such that we do not fear the man to whom we have once sold an engine. We want our customers to remain our friends, and any demand in reason will keep them so, as far as we are concerned. You are not required to purchase engines under the name "Eagle" this year and a new name the next. They always remain "Eagles" and we are zealous of the name and reputation. Each year we endeavor to advance our engines in the newer and finer details of fittings and construction. This principle enables us to state to-day that we are so far in advance in two-cycle marine construction that it will require a colossal effort to even meet such Quality and Competition that we will offer for 1911.

ABILITY and INTEGRITY

No institution rises above the individuality and character of its owners, and it is becoming more and more important for a pur-

chaser to know what kind of ability and integrity are back of his engine. It is needless to say that Eagle Engines have for eleven years represented all that is desirable in engines of the marine type, especially as regards Quality, Finish, Efficiency and Durability.

For the first time in the history of the marine engine business one is enabled to purchase an engine constructed by the highest class of engineering ability, including material such as has never before been supplied, and an equipment that has set a standard at a competitive price. We are giving you more for your money in the Eagle line of engines and equipment than it is possible to procure elsewhere. While we insist on quality, this does not infer that we aim to waste money in shams. Our engines are just as elegant on the inside to the eye of the finished mechanic as they are to the observing public from the outside. To sum it all up, the beauty of Eagle Marine Engines is in their simple Elegance, Harmony of Proportion, Excellence of Material, and Equipments.

QUALITY IS NOT PATENTABLE

No manufacturer controls it. Style, workmanship, material and finish, however, are matters of intuition, training, taste and experience. Our aims are high, our facilities for manufacturing of the best, our trained craftsmen are at our command to interpret our wishes relative to the standard we desire to maintain.

EQUIPMENTS

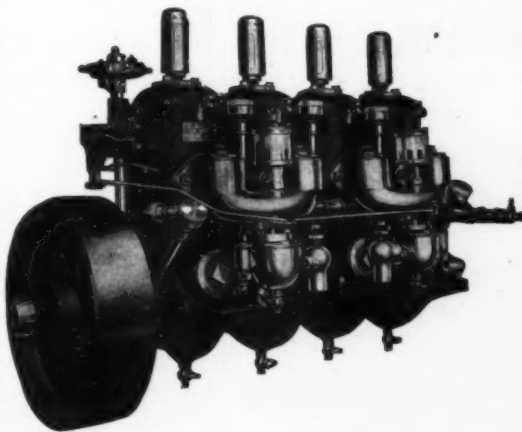
Price of Equipment Depending Upon Outfit is a Rare Delusion

You should realize that where you are quoted on equipments with variation of price from twelve to forty dollars, depending on what the offer is, that in order to secure what we supply as a regular equipment, it will be safe for you to figure that if you want a salt-water outfit and high-grade equipment you will be charged the long price, and after the long price you will find that you still lack such an equipment as the Eagle Company supplies regularly with each

and every engine of their manufacture. We are not only setting a standard on engines, but also on equipments, and you should inform yourself particularly as to just what you are getting by being charged an extra compared to what we supply as a regular outfit.

CATALOG

Secure a copy of our new catalog; it is free merely for the asking, and really it is worth your time to make the request. You will find a great amount of information that will interest you, and take our word that it is nicely printed and handsomely illustrated. Our Handsome Illustrated Catalog Mailed Free Upon Request.



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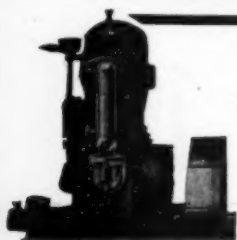
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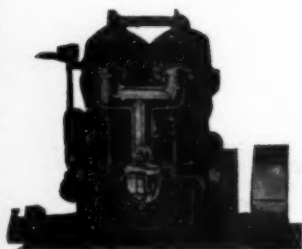
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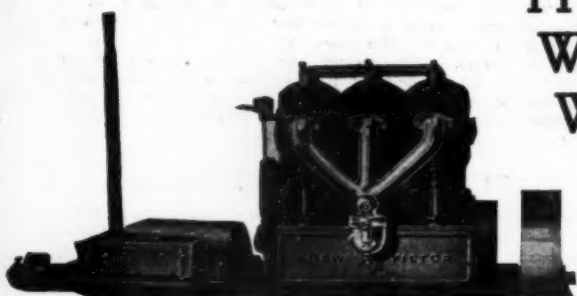
EAGLE MARINE ENGINES — DURABLE — SIMPLE — EFFICIENT



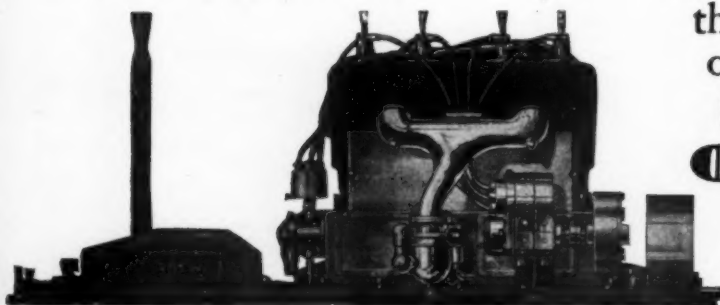
1 Cyl. 6 H. P. 4¾ x 5¼.



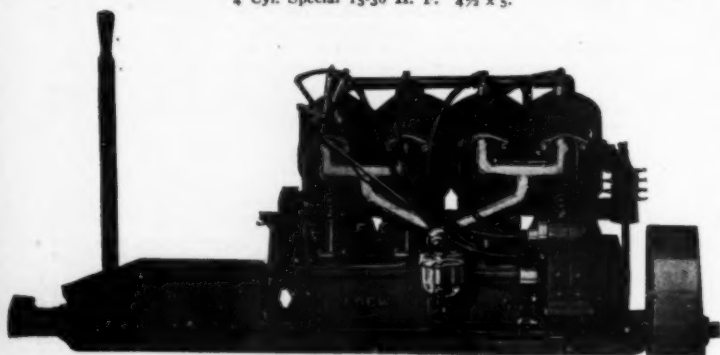
2 Cyl. 12 H. P. 4¾ x 5¼.



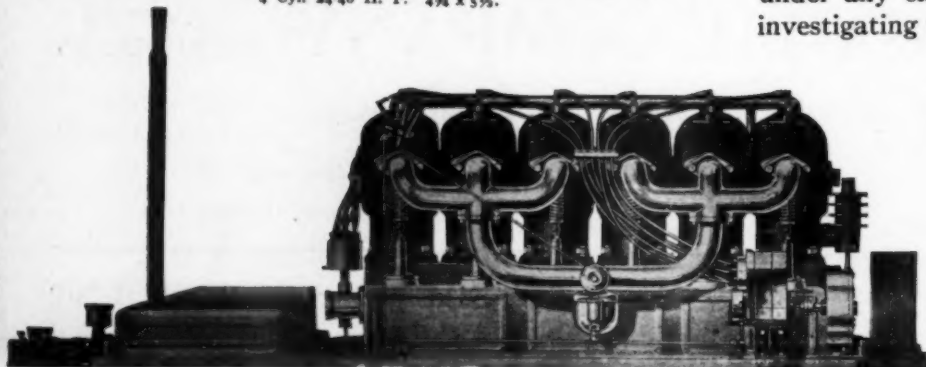
3 Cyl. 18 H. P. 4¾ x 5¼.



4 Cyl. Special 15-30 H. P. 4¾ x 5.



4 Cyl. 24-40 H. P. 4¾ x 5¼.



6 Cyl. 36-60 H. P. 4¾ x 5¼.

"As Rugged as the Pyramids"

LOEW-VICTOR MARINE ENGINES

FOR 1911

DOES YOUR ENGINE GO ALL OF
THE TIME—WHENEVER YOU
WANT AND AS LONG AS YOU
WANT IT TO GO?

¶ The Loew-Victor is built to do this—either in a speed boat or in a cruiser. It is built heavy and substantial enough for either work and to go as long as the operator requires. This is one of the reasons for the success and popularity of the Loew-Victor.

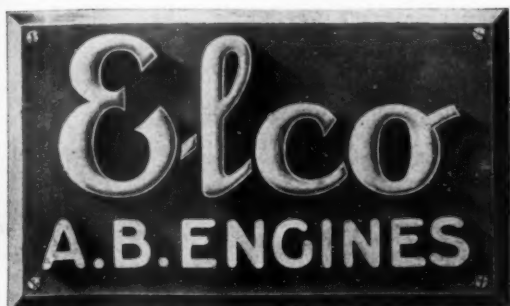
¶ There's no material too good for Loew-Victor Engines—no accessories too expensive or too complete. We pride ourselves on having the most complete stock engine on the market. The finish must also appeal to you. The iron parts are enameled a lead gray; the valve caps are brass, and all brass parts highly polished. Nothing flimsy and nothing shoddy on Loew-Victor Engines. Every engine that leaves our plant has been put through a brake test—we know exactly what each machine has done and we can tell you.

¶ If your wants can be satisfied with any of the sizes of engine we build, you can't afford under any circumstances to purchase without investigating the Loew-Victor line.

The Loew Mfg. Co.

9155 Madison Ave.,
Cleveland, Ohio

When writing to advertisers please mention MOTOR BOATING, the National Magazine of Motor Boating.



HOLD THE CHAMPIONSHIP

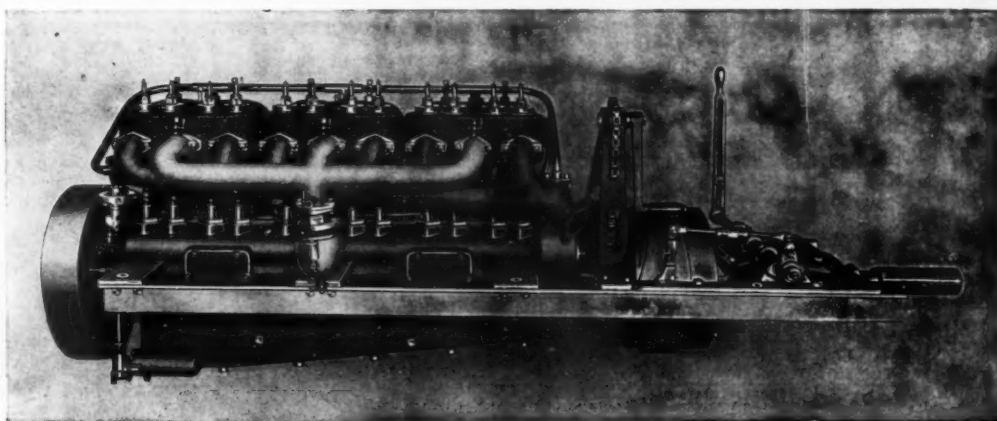
For three years, consecutively they have won both the *Long Distance Race*: New York to Poughkeepsie and return, 132 miles, at the remarkable average speed of 24 miles an hour; and also, the race for the *Interstate Trophy*.

Reliability

Workmanship

Design

They Weigh Only 10 Pounds to the Horse Power



60-70 H. P., 6 Cylinder ELCO-A. B. Engine, Weight 650 pounds.

Elco-A. B. Gasoline Engines are built in a celebrated Gun Factory where only the best material is employed by most experienced mechanics; each part subjected to a rigid inspection during every stage of construction.

Two Sizes: 40-50 H. P. 4 cylinder and 60-70 H. P. 6 cylinder

The cylinders are 5 inch bore by $4\frac{3}{4}$ inch stroke, the engines developing their rated horse power at 1000 R. P. M., or one horse power for each 10 pounds of engine weight, which cannot be equalled, for continued service, by any other engine offered in the market.

*We are exhibiting these engines at the Motor Boat Show,
Madison Square Garden, February 21st to March 4th.*

Chicago Salesrooms
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Address

Elco 201 Avenue A, 27 minutes from Liberty and
23d St. ferries C. R. R. of N. J. **Bayonne, N. J.**

"Buffalo" Engines And Their Uses

Next to high quality and splendid achievements, "BUFFALO" Engines are best known for their wide range of usefulness.

Have you a CANOE to be powered?

They are successfully fitted with 2 H. P. Regular Type "BUFFALO" motors, while the 3 H. P., 5 H. P., and 7½ H. P. engines of the same type are the best possible power plant for small launches, say 16 feet and up.

Have you a CRUISER, a floating home?

A 100 H. P. "BUFFALO" is just the thing to vitalize it—the powerful, always reliable, no-trouble engine. Is it a work boat of any kind?

Then by all means install a "BUFFALO" HEAVY DUTY ENGINE for we have a size that is best suited for just the kind of work you have to do. If you don't think so ask any of the fishing boat owners who are THROWING OUT STEAM ENGINES TO MAKE ROOM FOR "BUFFALOS".

Do you want to equip a speed boat that will distance any boat on the course?

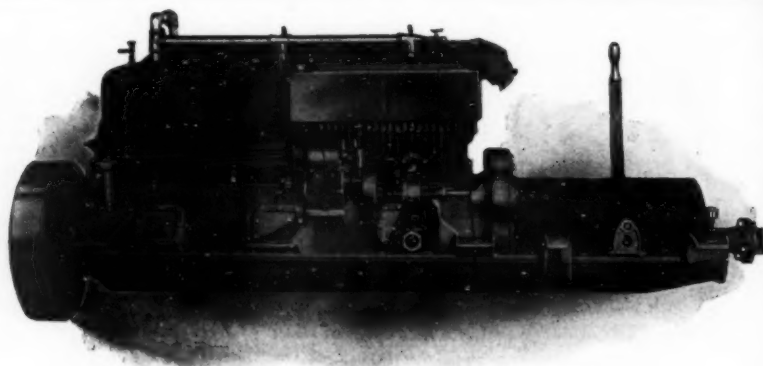
Then you MUST buy a "BUFFALO".

We mean every word of it when we say we build

"An Engine For Any Sort or Size of Boat"

BUFFALO GASOLENE MOTOR CO.

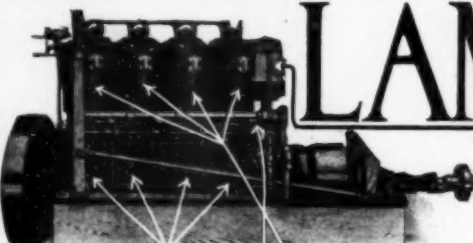
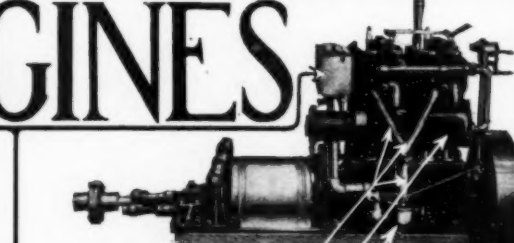
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THE LATEST "BUFFALO"

Weighing less than many engines of half its power our new six-cylinder engine with 4¾-inch bore and 5-inch stroke is rated 40 H.P. at 800 R.P.M. In construction it follows the general lines of the 25 H.P. Auto-Marine. Enough said.

LAMB ENGINES

Cylinders
Cast separately, water jackets fitted with hand holes, walls ground. Medium Duty and High Speed 5¼ in. bore, 6 in. stroke. Heavy Duty 6¾ in. bore, 7 in. stroke.

Crank Case
Large hand hole plates, end disk removable.

Water Circulation
Bronze, long-stroke plunger pump. Water piping has expansion joints. Bypass cylinder heads.

Reverse Clutch
Planetary type, Direct Cone drive ahead; for reverse gears in action. Gears steel on bronze pinions. Encased in oil. Same speed astern as ahead. Only two adjustments. Control led to forward end of Motor.

Ignition
Jump-Spark. Splitdorf or Bosch Magneto, when specified. Controls led to forward part of Motor.

Cylinder Heads
Removable. Valve caps polished brass.

Crank-Shaft
One piece open hearth Steel, milled, turned and ground. Fly-wheel end tapered.

Lubrication
Positive Mechanical Oilier, driven by ratchet from cam-shaft, oil carried to each wearing part.

Pistons and Rings
Trunk Pattern; 3 Rings Medium Duty; 5 Rings Heavy Duty. Ground.

Intake Branches
Give a direct and easy flow of gas. Perfectly smooth on inside.

Exhaust Manifold
Thoroughly water-jacketed. Fitted with hand hole plates.

Carburetor
Schebler Controls led to forward part of motor. Hot air intake.

Valves and Valve Mechanism
Both on one side. Thoroughly water-jacketed. Valve and stem forged from one piece. Lateral adjustment on push rod. Rod actuated by link and roller of hardened steel. Guides long and removable.

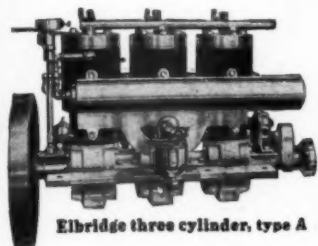
Connecting Rods
Annealed Malleable Iron H cross section. All connecting rods except on 12 H. P. are fitted with 4 bolts; each bolt fitted with 2 nuts and Cotter pins.

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Valuable Information for Motor Boat or Aeroplane Builders



Elbridge three cylinder, type A

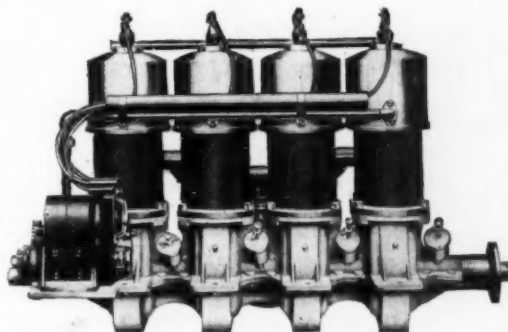
During the past year we have personally inspected all the fastest American Motor Boats, watched most of the speed contests and won many trophies with boats of our own.

Naturally we have learned much about the different types of boats and their power plants, and are glad to pass our information along to you.

Just write our Information Department about any point that puzzles you. We may be able to solve your problems for you.

Power for weight has been the most important factor in the success of the 1910 boats. In this particular ELBRIDGE ENGINES are in a class by themselves, a slightly modified type of our Featherweight model holding every novice Aviation record made during the past year.

If you are interested in boats or aeroplanes, we have information of inestimable value to you. Write us for it and ask for *Free* catalog of 1911 Engines.



Elbridge four cylinder, Aero Special

Elbridge Engine Co., 20 *Culver Road, Rochester, N. Y.*

Arthur P. Homer, 88 Broad Street, Boston, Mass.
New England Representative.



SCRIPPS MOTORS

¶ The open water, the blue sky dotted with white clouds overhead, and a comfortable seat in a trim little craft, a few friends for company, and the soft murmur of a smooth sweet-running engine that never stops purring until we reach some shady, quiet woodland-spot looking out over the water—

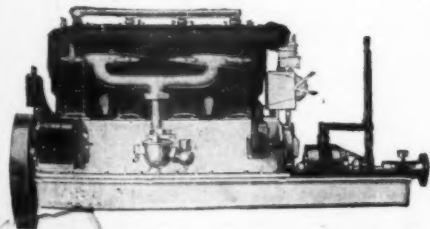
¶ That's what we're all waiting for!

¶ The joy of the thing depends on one important point—the engine must be right. The man who makes the mistake of buying a cheap engine loses all the fun—sweating and fuming to get started, perhaps stopping dead in the middle of the trip, and laboring for hours in the hot sun coaxing the engine to go again, covering his clothes with grease, oil and dirt—these are the things that wipe out the pleasure.

¶ Our best advice to you, whether you buy a Scripps or not, is—get a good engine. Pay enough for your engine so that it ought to be good. The man who allows himself to be persuaded by the apparent advantage of low price is saving a few dollars which a single mishap later in the season will cause him to regard as sadly misplaced economy.

¶ There are a number of good engines on the market. We believe that Scripps Motors are just about the height of mechanical perfection and careful, expert design. We believe we can convince you of the fact if you will investigate.

¶ We feel sure that the Scripps catalogue in your hands will demonstrate to you the justice of our claims. It describes and illustrates our new 1911 Models.



SCRIPPS MOTOR COMPANY

651 Lincoln Avenue

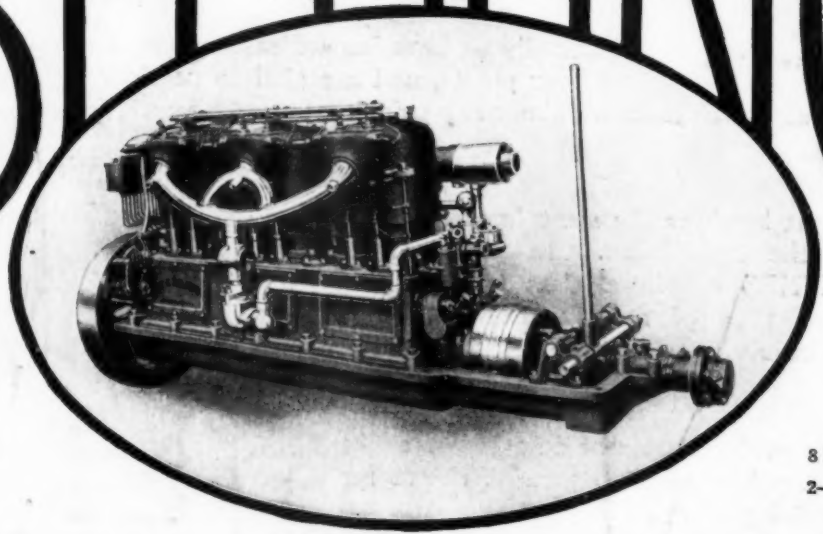
Detroit, Michigan

SCRIPPS MOTORS

7

95

STERLING



WRITE FOR
1911
CATALOG

SIZES
8 H. P. to 240 H. P.
2-4-6-8 Cylinders

MARINE ENGINES FOR HEAVY DUTY SERVICE

20 H. P., 40 H. P., 60 H. P.

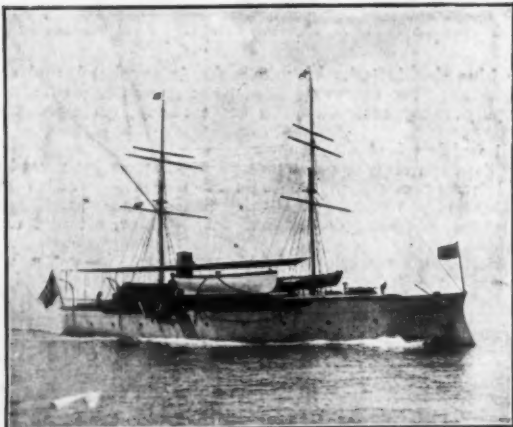
When you know that these men use Sterling engines it may help you to decide on one:

Richard Merrill, Port Lavaca, Fla.....	40 H. P.
C. A. Godshalk, Philadelphia, Pa.	40 H. P.
Chas. A. Welch, Milwaukee, Wis.....	40 H. P.
Com. T. B. Bayliss, New Bedford, Mass.....	40 H. P.
"White Sox" House-boat, Chicago, Ill.....	40 H. P.
Richard M. More, Bridgeton, N. J.....	60 H. P.
H. L. Friend, Boston, Mass.....	60 H. P.
Com. W. P. Pembroke, Rochester, N. Y.....	60 H. P.
Norman MacDonald, Calumet, Mich.....	60 H. P.

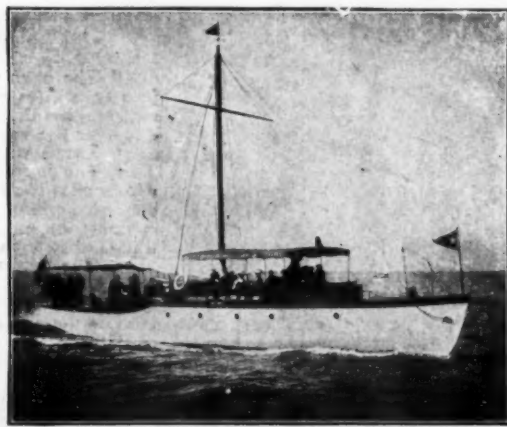
Every one of these men have had experience with other makes of engines, but since using the Sterling, they all express themselves as being perfectly satisfied, and say that when again in the market "it will be a Sterling."

We show here the 6-cylinder, 60 H.P. engine. The 20 H.P. is a 2-cylinder and the 40 H.P., a 4-cylinder. The bore and stroke of this group of engines is $6\frac{1}{2}$ " x 8". Rated power is developed in the 20 H.P. at a speed of 425 r.p.m., and in the 40 H.P. and 60 H.P. at a speed of 400 r.p.m. The 20 H.P. is furnished with either Perflex or Orswell waterproof system of ignition if preferred to regular jump-spark ignition. The 40 H.P. and 60 H.P. are regularly equipped with Bosch magnetic make-and-break system of ignition in addition to regular jump-spark system, also fitted with bilge and air pump.

Other sizes for semi-heavy duty and speed work are, 8, 10, 12, 15, 18-25, 25-40, 30-45, 35-55, 45-65, 100, 180, 240 H.P.



FRIENDSHIP IX.—67 ft. long by 13 ft. 6 in. beam. 12 miles per hour
BOSTON—A. P. Homer, 88 Broad St.
NEW YORK—Bruns Kimball Co., 134 Liberty St.



KEE LOX III.—76 ft. long by 14 ft. beam. 12 miles per hour
PHILADELPHIA—Edwin Kain Co., Bourse Building
CHICAGO—Chicago Boat and Engine Co., 1508 Michigan Ave.

STERLING ENGINE COMPANY, 1254 Niagara Street, Buffalo, N. Y.



V
3

M
A
P

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x